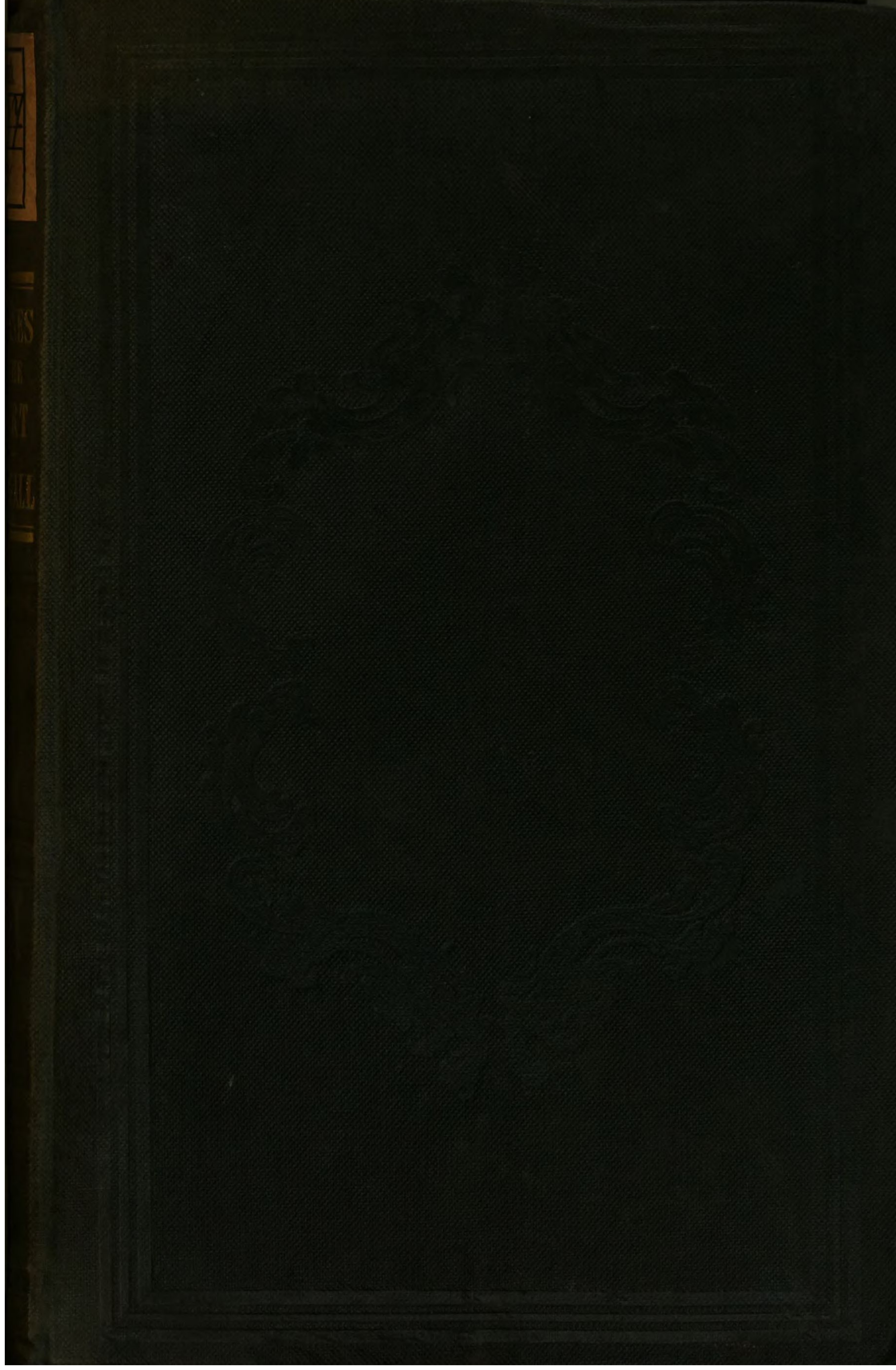




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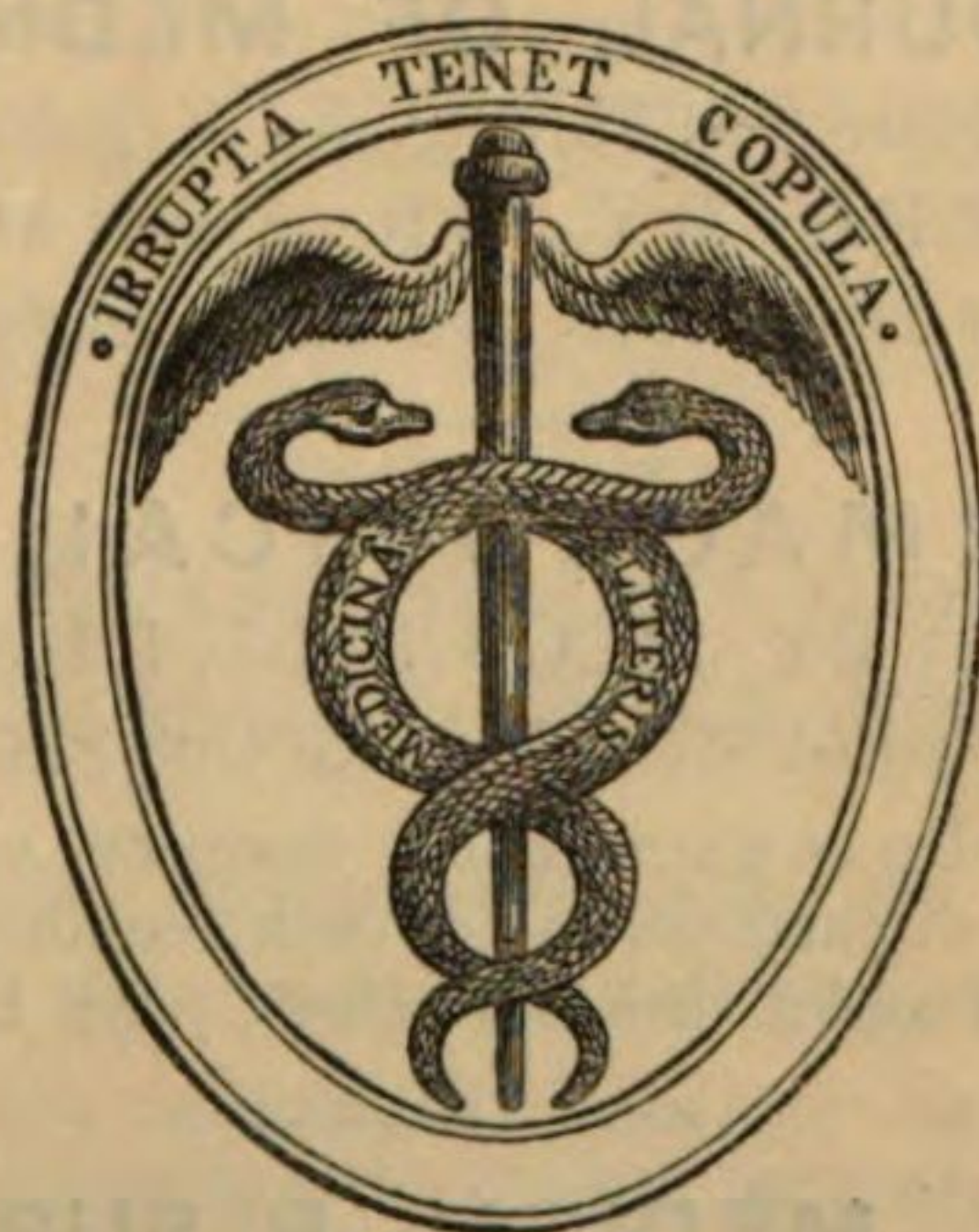
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BY

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PREFACE.

THE following observations are the results of many years' experience; which the Writer wishes to submit to the consideration of his Professional Brethren. Having endeavoured to sketch out the various indications, by which the treatment of the most commonly-occurring forms of Heart-disease should be regulated, and thus to prevent the necessity which otherwise must exist, for every practitioner to discover by experiment on his patient, the best method of treating each morbid affection respectively—he hopes the directions here proposed will prove useful to the Student of Medicine, and also perhaps to the junior branch of the Profession.

The Diagnosis of several pathological states of the heart, he trusts, will be here found so clearly laid down as to be easily made out, and to be within the reach of every one who will take the necessary trouble to inform and educate himself. And truly, the reward of such efforts will be great indeed—in the comfort such practitioner must feel from obtain-

ing a clear insight into the Anatomical Pathology of the disease; while he cannot but experience the highest gratification, when he is able at once to relieve the anxious sufferer, by assuring him that his disorder is merely functional, and neither organic nor incurable.

The Writer has long had before his eyes, the example of the illustrious and practical Sydenham—whom, in one respect he has desired to follow, though at humble and almost reverential distance—for like him, the Author has felt convinced, that the best, if not sole means a physician has, of acquiring a correct knowledge of his art, is by a diligent and minute attention to the phenomena of diseases, by giving up his whole mind to the investigation of the changes and progress of symptoms, from which the true and natural indications of cure can be readily deduced. Accordingly, he has long avoided hypothesis, devoted his chief attention to practical medicine, and confined himself to an attentive consideration of the *juvantia* and *lædientia*—whilst he has endeavoured to keep constantly in recollection, that the phenomena of disease are often so complicated, fugitive, and equivocal, as to require the greatest circumspection in the observer.

But, after lengthened experience, accumulated facts, and a consideration of the *juvantia*, forced on his mind a rationale of causation—a theory—which, if hereafter established as correct, must, he thinks,

lead both to a clear understanding of the at present obscure pathology of Rheumatism, and to an effective protection against Heart-Disease, as its consequence; it must, therefore, conduce to a great curtailment of mortality, and to a prevention of much misery, more especially in the Poor Man's case.

Lately, he has found to his great pleasure, that a similar theoretical idea has occurred to an eminent physician practising in Germany — the difference between that gentleman and himself being, that the one has merely announced the idea, whereas the Writer has for years prescribed according to his particular views, and found the answering results favourable to his theory.

To this extent has theory been admitted into the following pages. In every other respect the observations are altogether practical, and are unexaggerated representations, taken exclusively, as are also the illustrative cases, from the sphere of his own Practice; neither has any thing been asserted which has not been verified by himself.

The Diagnosis is, a practical digest, and a compilation from the latest authors who have written on the subject; but as additional observations to those, beginning at page 3, have been inserted, the reader is requested to turn to page 190, where he will find some extracts from an excellent practical work, printed, though not yet published, by Francis Sibson, Esq., of the General Hospital, at Nottingham.

The Science and Art of Medicine, like other sciences, has not stood still in the progress of time; but each succeeding year has brought with it, more or less of improvement; and in no part of the Art has improvement been more manifested than in that which concerns the Diagnosis of Diseases of the Heart.

The Author would fain be allowed to hope, that this book may, at least, serve as a milestone to mark the progress made up to the present day; though his aspirations are, that the treatment here recommended will be found an improvement in several respects, of that which has been hitherto adopted; and that Time will substantiate the correctness of his views, with respect to the prevention of some of the forms of the Heart Disease.

Should the objector still require further reason for the present publishing, the Writer will conclude with these words of Sydenham:

“Cæterum quantacunque fuerint aliorum conamina, semper existimavi, mihi vitalis auræ usum frustra datum fore, nisi et ipse, in hoc studio versatus, symbolum aliquod, utcunque exiguum, in commune Medicinæ Ærarium contribuerem.”

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ON HEART DISEASES.

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"MULTUM EGERUNT QUI ANTE NOS FUERUNT, SED NON PEREGERUNT—  
MULTUM ADHUC RESTAT, MULTUMQUE RESTABIT, NEC ULLI PRÆCLUDITUR  
OCCASIO ALIQUID ADJICIENDI." *Seneca.*

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CHAPTER I.

GENERAL OBSERVATIONS.

OF all the manifold diseases which infest humanity, there are probably none which enlist our sympathy more strongly than those of the heart—and justly so. If we look at the rich man, labouring under such disease, we shall find him condemned to live such a life of precaution as to deprive him of much of its enjoyment, while the fear of sudden death constantly hangs over him, and throws a gloom over almost every passing moment. It is true, this fear, though certainly well founded, in some degree, has been much exaggerated, and still is so; for it is pleasing to be able to assert, that when the medical man's instructions can be followed, and are implicitly obeyed, the death of our patient may be delayed by judicious treatment, and

much of the risk, both of a fatal result, and of sudden death, may be considerably diminished.

But if such be the state of the rich man, with all his means and appliances, what must we deem of the poor man's lot, when thus afflicted? Several cases of this latter kind have happened in my practice, and most distressing have been the difficulties during the treatment of them, as well as the subsequent watching of their after progress. When discharged as convalescent, the chief, if not sole chance of the poor man's future escape, is based on his being able to live without labour, and, consequently, without muscular exertion of any sort; yet, in the majority of such cases, the convalescent is forced to return immediately to labour for the support of himself and family. In such instances, a fatal issue may be, by treatment, averted once, and perhaps again; but at last, either another attack proves altogether intractable to our remedies, or the poor fellow suddenly drops down dead, while in the very act of muscular exertion.—See Cases Jno. F. and T. H.—Valvular Diseases.

Perhaps in no respect is so great an improvement in modern medicine manifest, as in the Diagnosis, Anatomical Pathology, and treatment of diseases of the heart.

Such diseases are now detected by the properly educated practitioner as soon as advice is sought, and possibly the functional is prevented from becoming fixed or organic disease; while, in some few cases, we may hope to promote a recovery, even in organic disease, if not too far advanced. Formerly these diseases were classified under the heads of

Asthma, Dyspnœa, Hydrothorax, &c., and all the practitioners of the last century seemed to know of such cases was, that they would end fatally. Such a despairing knowledge led to a system of treatment ineffective in the highest degree; while the notions prevalent in those days about the nature of dropsy (so frequent an effect of heart disease), and about the impropriety of blood-letting in the dropsical diathesis, must have confirmed such practitioners in their do-nothing system. Happily this state of things is now altered, and medical treatment comes often effectively to the rescue, in very many cases of severe suffering and of great danger to life.

GENERAL OBSERVATIONS ON DIAGNOSIS.

It is somewhat singular that we may meet with some elderly practitioners of even the present day, by whom the diagnosis of the various forms of heart disease is considered not only very difficult, but too difficult to be attempted; yet the various physical indications seem to me to be usually more easily made out than in most other cases of disease; and many thanks do we owe to those who have pioneered the way for us in this respect. Sometimes when the case is very complex and the physical sounds vary, as they often do, under the varying states of the system, we may find much difficulty in making up our minds as to the exact site and pathology of the disease; yet even then, the general signs will come to our assistance, and point so evidently to the proper system of treatment, as to render our uncertainty in diagnosis of no practical importance.

The auscultator should have a tolerably good ear and sound common sense, joined to a good professional education. If he will then obtain a clear understanding in his mind of the exact position of parts in the thorax, and if he will attend rather to the site of the sounds than to their intensity or peculiar character, while he also remarks the different directions in which the sounds are spread by the sonorous currents, he need not fear making out a satisfactory diagnosis in all tolerably clear cases; but he must not mystify himself with the many fine distinctions of such sounds, which are current with some ultra-auscultators.

Sounds can be but imperfectly represented by letter-press, and no description of them on paper will alone sufficiently prepare the practitioner for the bedside. After a thorough understanding of the relative position of the thoracic viscera, during inspiration and expiration—of the exact sites of the ventricles—of the valves and great vessels, both in the upright and recumbent position of the human body, let the student take the stethoscope in hand, and let him habituate himself first to the healthy, then to unhealthy sounds. Then he may test his knowledge by clinical experiment and observation: this is the best course to pursue, and the only one which will lead to any certainty in diagnosis, or prepare the practitioner for the baffling cases he must expect occasionally to encounter. The best position to place our patient in for examination is the upright one, with the body leaning a little forward, and inclining slightly to the left. While examining the state of the mitral valve, it will be right to make

our patient suspend respiration for a few seconds on account of the overlapping lungs. The practised ear and hand will not merely be able, in most cases, to detect the part deranged in function, or altered in structure; but they will enable the practitioner to ascertain in a measure, the quantum, the progressive increase or diminution of the fluid circulating in the cardiac cavities, or of the irritability inherent in the parietes; and it is perhaps quite as essential to success in practice, to ascertain the latter states, as merely the part affected.

Debility and emptiness of the ventricle may be conjectured by the comparative loudness of the stroke-sound, and irritability of the same part; by the short, sharp, and peculiar striking of the impulse at, or near, the apex. The ear of the auscultator must be experienced in such matters, and if so, sufficient accuracy may be attained to guide us in our practice, if we, at the same time, pay due attention to the general symptoms.

In the healthy state, the heart comes in contact with the thoracic parietes, over a space of from twenty to twenty-four lines, both vertically and transversally, and the heart extends generally about one and a half or two inches to the left beyond the sternum—it is then covered by the overlapping lung. It will often be very difficult, even with very strong percussion, to detect points where it ceases to lie immediately beneath the thoracic walls. In a vertical direction, the heart does not extend more than from half an inch to an inch above the place where it begins to be covered by the lung; so that the ver-

tical dimension of this organ is a little less than the transversal.

The average transverse diameter is about four inches—on the right side, the heart does not usually extend beyond the right edge of the sternum, in a state of health. The distance of the heart from the clavicle, Piorry states to be in general from three to three and a half inches from the clavicle; but this measurement is not to be depended upon, as it may be influenced by the state of the abdominal viscera as of the heart itself.

He recommends us to percuss the right lung anteriorly, to try and trace the superior edge of the liver, to find the right cardiac cavities, then the left; but the best mode of examining, is by extending the hand and fingers, spread out in fan shape, across the præcordial region, so as to cover the lower part of the sternum, and the cartilages of the fourth, fifth, sixth, and seventh ribs.

We had better adopt Laennec's recommendation, and map out the præcordial region into a right and left; the first includes a space covered by the lower third of the sternum, and corresponds with the right ventricle of the heart; the left is a space covering the cartilages of the left fourth to that of the seventh rib.

It has been ascertained that a line drawn from the inferior margin of the third rib across the sternum, passes over the pulmonic valves a little to the left of the mesial line; the valves of the aorta are directly behind them, whilst the apex of the heart beats between the cartilages of the fifth and sixth

ribs, at a point about two inches below the nipple and about one inch on its sternal side.

The pulmonary artery, midway between its origin and the place where it divides into the two trunks, distributed to the lungs, bulges at the interspace between the cartilages of the second and third left ribs close to the sternum.

In a state of health, the sounds of the heart's action can only be heard in the præcordial regions. In fat persons, the sounds may be heard by the auscultator only over a space of about a square inch; in thin, or in narrow-chested subjects, and in infants, the heart's actions may be heard along the half or three-quarters of the sternum, at the anterior superior part of the left breast, and sometimes, though rarely and feebly, under the right clavicle. Such may be the natural limits to the sounds, which will be more or less loud, as they are nearer to, or further from, the præcordial region.

In disease, we may hear the heart's actions in the following order: First, over the whole extent of the left side of the chest; second, in the right side of the chest, almost all over its surface; third, in the posterior portion of the left side of the chest, and (though rarely) in the posterior portion of the right side; fourth, in the whole anterior of the thorax, which often bulges out greatly, showing the modelling process, caused by the inordinate action of the heart.

The thinner and weaker the walls of the heart, the louder can the sounds be heard, and the more extensive is the surface over which they are heard, and *vice versâ*.

The two sounds heard during the healthy action of the heart are: the first, or systolic, which accompanies the contraction of the ventricles, is dull and prolonged when compared with the second sound, and nearly coincides with the pulse as well as with the impulsion communicated to the ear by the stethoscope; the second is sharp and clear, and has been compared to the sound of the clapper valve of a pair of bellows; it takes place a moment after, but almost synchronous with, the pulse at the wrist. The sounds of the right cavities are heard under the sternum, and those of the left, under the cartilages of the left ribs.*

The abnormal sounds are the bellows sounds, or *bruit de soufflet* of the French: the rasp sound; the creaking, or new leather sound; and the purring tremor. The first is a blowing sound, well described by its name, and it may accompany various states of the heart. It is the most generally met with of all cardiac abnormal sounds; it may betoken no danger to life, or it may be the evidence of a fatal disease. The rasp sound resembles that produced by the action of a rasp upon a piece of soft wood, and when once developed, it never ceases; it is caused by some narrowing of a cardiac outlet, or by some scale of ossification standing out from the serous membrane covering the valve or some other part.

The creaking, or new leather sound, resembles that produced by sitting on a new saddle, and is heard only in a certain stage of pericarditis; it accompanies

* A dilated right auricle may be mistaken for the effusion of pericarditis. See case J. C., Chapter on Pericarditis.

the heart's systole, and for the most part is of short duration.

The purring tremor is like the purring of a cat; it accompanies the rasp sound, and indicates the formation of polypi, or a narrowing of some orifice, and a consequent obstruction to the current of the blood; but it may be functional only, as for instance, when polypi are formed in the heart. This purring tremor seems to me to be a distinguishing mark of polypi, or of fibrinous concretions in the heart. I have never met with polypi unattended by this tremor. I concur with Dr. Watson in considering the bellows sound as the generic sound, and that when it becomes rough or harsh, it may resemble a rasp or file sound. "The bellows sound may be occasioned by any change which alters the normal proportions between the cardiac ventricles and their orifices of communication with each other, and with the blood vessels that respectively enter or leave them; it may also be occasioned by a preternatural velocity, or the thinness of the blood, through a healthy and well-adjusted heart. Under these circumstances the bellows sound will be a systolic one."

—*Dr. Watson.*

The cardiac murmurs are to be classed as systolic—that is, as occurring with or replacing the first sound of the heart; and as diastolic, occurring with second sound. The systolic has been alluded to, and the diastolic accompanies organic disease of the valves; thus, if the mitral valve remain always open, the blood rushing into the ventricle will cause a diastolic murmur, and the same thing occurs if the aortic valves permit of regurgitation. The mode

of distinguishing between the two will be mentioned in the following pages, wherein the special diagnosis of certain disorders and diseases of the heart will also be found.

We should constantly bear in mind that a murmur accompanying only the first sound or impulse, is necessarily caused by a current of blood *from* a ventricle, and that a murmur accompanying, following, or replacing the second sound, is caused by a current *into* a ventricle. Thus, obstructive disease in the aortic valves, presents to our ears a murmur with the first sound or impulse heard along the upper part of the sternum, and in the right or both carotids; while such a state of the same valves as admits of regurgitation, produces a murmur with or instead of the second sound; and of course a combination of the two states, will be shown by a double murmur. Such will be the signs of similar pathological states of the mitral valve; only we must recollect that obstructive disease of this valve is rare. This valve is situated about the cartilage of the left fourth rib, near the sternum; but the murmur is best transmitted through the cardiac apex, where it must be looked for.

We must be prepared at times, to find a displacement of the ventricles in relation to the surface. Usually the cardiac impulse felt on full expiration at the sternum is that of the right ventricle; and the left only touches the walls of the chest at its apex. Now if the left ventricle be enlarged, and the right only of normal size, the impulse of the left is felt where we look for that of the right; and the sound of the right may be transferred even to the right of

the sternum, where it can be heard in such cases. Again, the right ventricle may be enlarged, and push the left too much to the left side. This state of things might puzzle the unprepared practitioner; but he has only to bear in mind that if hypertrophy of the left ventricle encroach on the region of the right, he may know that it still is the left by finding that there are sound and impulse to the right of it, and no other sounds to the left. In displacement of the heart to the left, the sound and impulse of the right ventricle will be found on the lower and right part of the cardiac space, while those of the left will be found above and to the left.

The general symptoms of diseases of the heart are—dyspnœa, generally the first and constant attendant: this is increased by any and every muscular exertion, unto a most distressing and alarming anhelation;—orthopnœa attends some cases—pulmonary congestions, whence issue hæmoptysis, œdema pulmonum, and general œdema, hydrothorax;—congestion of the liver, and of the abdominal venous system, with their consequent ascites:—cerebral congestion and hæmorrhage:—palpitation, causing often great distress:—permanently intermittent pulse:—great distress depicted in the countenance, giving to the experienced eye strong indication of heart disease:—languor and syncope:—the chylopoietic functions much disturbed in many cases; the skin is variously affected—sometimes highly injected, at others, cold, pale, and anæmic.

If we study the pathology of this class of disease, we shall find, that heart disease propagates itself in

a direction contrary to that of the circulation: thus, suppose we have inflammation set up in the lining membrane of the left ventricle, and that a deposition take place on the mitral valve, so to unfit it for healthy action that it will permit regurgitation through it, the left auricle first becomes distended with blood, and perhaps hypertrophied, then the lungs become congested. In no long time, the right ventricle feels the effect of this obstructed circulation; then the veins, returning blood from the head, liver, and indeed all parts, become gorged; causing various disorders of the brain and of the liver, till ascites and general dropsy supervene to close the scene of the patient's sufferings. It is often highly interesting to the medical man to watch the series of symptoms appearing as above stated, and marking the progress and pathology of the disease.

In some cases, to which I have once before alluded, where the signs derived from percussion and auscultation are equivocal or of doubtful import, or altogether wanting, we must study the general signs; for, as Pigeaux tells us, we shall be baffled at times in our diagnosis: "*Les altérations organiques et matérielles du cœur donnent lieu à certaines perturbations locales et générales bien connues; la percussion, l'auscultation, l'inspection immédiate de la région précordiale, les révèlent aujourd'hui avec assez d'exactitude à qui sait les interroger. Cependant le diagnostique anatomique n'est pas aussi facile à poser qu'on le pense généralement aujourd'hui. S'il est des cas où l'erreur est évidemment le fait du praticien inexpérimenté, il en est d'autres qui échappent à l'in-*

vestigation la plus minutieuse, soit par les complications qui voilent la lésion fonctionnelle, la rendent moins univoque, et donnent le change sur sa valeur, soit parcequ'en effet il est plusieurs altérations organiques qui ne s'accompagnent pas de symptômes locaux toujours evidens; ou bien enfin parcequ'il est des troubles fonctionnels purement dynamiques ou nerveux qui simulent plus ou moins exactement les symptômes locaux des affections organiques."—" Si les signes locaux sont insuffisans, on doit chercher à les compléter par l'étude des causes de l'affection, la filiation des symptômes, leur marche, et au besoin les perturbations fonctionnelles générales doivent être interpellées pour l'éclaircir en cas de doute."

It would be well, could we always and with certainty distinguish between functional disorder, and organic disease of the heart; but, as the foregoing quotation shows, this is not always to be done. This circumstance will at times prove a comfort to both practitioner and patient; as it should prevent the former from either giving or entertaining too gloomy an opinion while he awaits the results of treatment, and the latter can entertain more hope of recovery than if his medical adviser could decide that there is organic and incurable disease. We shall be aided in this diagnosis by observing whether the symptoms have arisen suddenly or come on gradually; whether they are intermittent or constantly present. Andral in his "Clinique Médicale," justly says, "the only means of making this diagnosis are derived from observing the mode of invasion, and the permanency or variableness of the

symptoms." Wherefore we should at the very outset inquire whether the dyspnœa (usually the first symptom) is a constant attendant upon every exertion of muscular power, and whether our patient can ever walk or run quickly, or up an ascent, without marked increase of the dyspnœa and distress of the circulation. If we find that such exertions can at times be made without additional suffering, we have at once a leading feature in the diagnosis between functional and organic disease. It is true that in functional disorder the dyspnœa and palpitation may be sometimes considerably augmented by any exertion, yet not uniformly so; and the patient may on other occasions be able to walk briskly, or up ascents, or even run, without that distress which, in a greater or lesser degree, is a *constant* attendant on organic affections.

The palpitation of functional disorder arises from some irritation, mental or bodily; follows immediately upon its cause, and ceases with it, or soon after; and the patient is more conscious of the inordinate action in functional disturbance. It, as well as the other symptoms of heart disease, is gradually developed, and is more or less permanent, though we may meet with great exacerbations. Sometimes there is no room for doubt—for if we hear distinctly a permanent rasp-sound, unaccompanied by the local and general sounds of pericarditis, we may feel sure that organic disease is present, and may at once pronounce on its existence; but cases of hypertrophy or dilatation may exist, in which there may be much difficulty in saying, whether the disorder is functional or organic.

And, finally, let not the student be discouraged, if he shall on some days distinctly hear certain sounds, which on other days are obscure, or not to be heard at all; for as I have already said, the sounds will vary from the effects of treatment, and from other causes. Treatment will often exert a marked influence over the sounds, so as to cause a new comer examining for the first time, to suspect or even to deny their existence altogether, past or present.

CHAPTER II.

PATHOLOGY AND TREATMENT.

“ Tout en pathologie, s'enchaîne et se co-ordonne, dès qu'on est dans le vrai.”—PIGEAUX.

It is generally supposed that diseases of the heart have been on the increase of late years; and an opinion is commonly entertained of their great and sudden fatality, even while still only functional. Both these opinions are somewhat fallacious; for with respect to the first, there is no reason why such diseases should not have prevailed as much formerly as now; but owing to imperfect diagnosis, their existence was not recognised, except in some few cases. The latter opinion arises out of the fact, that such diseases were only discovered and treated in their last and rapidly fatal stages. It must be very gratifying to the medical man of the present day, to see cases yield to judicious treatment, which formerly seemed to bid defiance to medicine—to watch the subsidence of functional disorder, which in time would have induced structural disease; and to find that cases of organic lesion, instead of being rapidly fatal, are now often delayed considerably in their course unto death. As in every other serious

disease, so in this class, there are instances of organic lesion, which are inevitably fatal, and fatal too, in no long time; but even here, treatment may assist the sufferer by alleviating his sufferings, in a greater or lesser degree. If we reflect on the pathology of the heart, we shall find that if only one side of it be diseased, that side will be by far the most frequently the left or systemic; that disease of the right is comparatively unfrequent, and then chiefly as a mechanical effect. To account for this, stress has been laid on the greater predominance of fibrous structure in the left, over that in the right ventricle; and fibrous structure is known to be obnoxious to disease: but surely this reason is not alone sufficient to account for the fact of the greater liability to disease, in the left than in the right ventricle. Is it not agreeable to sound physiology, to suppose that the fully elaborated blood is the natural stimulus to the heart's action, and further, is it not probable, that the arterial blood highly elaborated and rich as it is, in stimulant material, may be rendered by disease more stimulating to the parietes of the cavities and canals through which it circulates, than the venous would be to the right ventricle. Allowing this, there can be no difficulty in seeing how disease may arise under certain states of the blood, rather in the left than in the right ventricle; or if the elements of this fluid are altered from their natural proportion, or are changed in quality, such blood, instead of being a stimulant to healthy action, becomes an exciter of diseased action, the fibres of the ventricular parietes, and the lining membrane itself, subsequently are morbidly excited—first, endocarditis or hyper-

trophy ensues, and then valvular disorganisation. Conclusive proofs of an altered state of the blood being the proximate cause of certain cardiac diseases, can only be derived from analytic organic chemistry; but corroboration of this opinion has been lately afforded by Andral in his "*Hæmatologie Pathologique*" with respect to rheumatism, which disease seems closely connected with heart disease in some way, hitherto not perfectly explained.

Most authors attempt to explain the liability to heart disease during a rheumatic attack, by referring to identity of structure. Rheumatism, they say, affects the fibrous structure in preference, and fibrous structure abounds in and about the heart. Now this attempt at explanation might be received as a solution of the difficulty, if rheumatism were the only cause of heart disease; but this is not the case; nor can we thus explain the well-known tendency to inflammation of the heart's membranes, which exists in scarlatina, measles, &c. These diseases do not attack the fibrous structure exclusively, nor at all. In two cases I have found pertussis to have been followed by or accompanied with pericarditis and cardiac hypertrophy; and scarlatina, as a cause, is by no means unfrequent.

The only proximate cause adequate to the effects, seems to me to be a morbid state of the blood itself; accordingly an excess of fibrine has been detected in the blood of rheumatic persons; which excess must render it highly and morbidly stimulant. Probably there is also some other arrangement of its primary components; which, in the present state of our knowledge, may be best described by saying,

that it is relieved by an elimination of acid through the secretions, and best obviated in treatment by the use of alkalies. Possibly lithic acid may exist in excess in the form of lithate of soda. Whether this hypothesis be correct or not, I hope to be able, at some future period, to show evidence of the paramount utility of alkalies in the prevention of cardiac disease in rheumatism; and I can aver, that wherever I have seen alkalies given in rheumatism, judiciously combined with other remedies, there has been no distressing heart-complication; and I have read of cases where life has been lost, through cardiac disease from rheumatism, in spite of a treatment exceedingly able and energetic, except in the single omission of alkalies. It has been attempted to refute the hypothesis, by the answer that the blood will not allow free acid in its composition; that it is an electro-negative body. But it is not necessary that the acid admixture should be a free acid; on the contrary, it may exist under some other form; and probably in the serum. Lately I have been pleased to find that this conjecture, as to the probability of an acid nature of the blood in rheumatism, is not confined to myself; for I find an eminent practical physician, Dr. Schönlein, of Vienna, to be of this opinion also. He mentions a case where an ulcerated surface overspread itself during the night, with an earthy crystalline crust. According to Dr. Simon's researches this concretion of pus contained uric acid in a remarkable degree, combined with soda and ammonia. Dr. Schönlein thus expresses himself: "This is quite a new fact, which, formerly, indeed was conjectured, but which has now been confirmed by

chemical researches. To judge from this circumstance, it is not a very remote inference to suppose that uric acid is also existing in the blood in this disease, it being also ascertained that it also occurs in great quantity in the urine, as also in the perspiration. It has been now, moreover, found in the secretion of rheumatic ulcerations; it most likely occurs in the secretion of the mucous membranes (for the saliva has also an acid reaction); it probably will therefore soon be discovered in the blood of such patients."—*The Medical Times*.

So think I; yet some time will probably elapse ere an analysis be made confirmatory of this opinion—for it is not in every chemist's power to make such analysis accurately enough, on account of the great, almost inscrutable delicacy of the ultimate component atoms of the blood eluding the research—chemical changes occurring perhaps at the very time the analysis is going on.

Here, then, if we are correct, will be one indication of treatment;—to endeavour to alter this morbid state of the blood.

Another paramount indication is to reduce inflammatory action as quickly as possible whenever it exists.

We find the heart peculiarly irritable, causes physical and moral, often exciting the most alarming palpitations; and again these palpitations reacting on the heart, and effecting very much mischief. Indeed, the effects of any undue action, when the heart is diseased, are often very striking; and do more to develope and hasten the progress of the disease than perhaps any other single cause. Hence another in-

dication of treatment arises out of the necessity of finding some means to check this irritability; and consequently to prevent these palpitations.

The heart acts best on a moderate quantity of blood; therefore to reduce this quantity when excessive, becomes another indication. By attending closely to this part of the treatment, I think I have given much relief to sufferers; and we shall find that practice will give us a habit of appreciating in an approximative measure, the quantity of blood circulating in the heart, by means of the general signs, and of the impulse and peculiarity of the sound striking on the ear. The means of lessening the quantity are various—detraction of blood, general or local;—purgatives; diuretics; diaphoretics—every case requiring us to resort to one or another of these means, or to one exclusively, or to a combination of two or more, as experience may suggest. If this indication be rightly attended to, the heart will be found to act with an ease and a healthy vigour, strikingly in contrast with the previous state of labouring effort. I would beg to direct particular attention to this point of treatment; for often the diseased heart suddenly ceases to act; not from any extension of the disease under which it may be labouring; but from a greater distension of its parietes having been allowed to exist, than they could bear. That this distension is a frequent cause of the sudden death, is proved by our *post mortem* examinations presenting to our eyes, only traces of long standing disease; and by the well-known fact that over-distension is a cause of paralysis; as we witness in

some diseases of the urinary bladder. Such suddenness, was, at one time, quite inexplicable to me in some cases.

One other indication is to be derived from the state of the heart as to its tonicity or muscular power of propelling the blood—it may be deficient as in dilatation, or in excess as in hypertrophy.

As in the treatment of these diseases, we cannot succeed without rousing into vicarious action the kidneys, liver, bowels, skin, or urinary organs; our prognosis must be a good deal based on the sound state of one or more, or all of these viscera—for very soon after, disease is set up in the viscus or viscera, upon which we have to depend for our success, we may give up all hope of prolonging life much longer. It has been justly observed, that a great amount of lesion of the heart is compatible with life, so long as the excretions continue free; but with their failure, the most unfavourable events follow; and mostly in rapid succession.

A final indication is, to remove or obviate, as far as may be possible, urgent symptoms, such as dropsy, &c.

Our first indication is to effect an alteration in the blood diseased. Now the chief deviations from a healthy state consist probably in a deficiency or an excess of the fibrine, or of red globules; while the chemical constitution of the blood may be altered. In Hypertrophy or Endocarditis from rheumatism there is much reason to believe that an excess of fibrine exists; and also from a predominance of acid throughout the system, that the blood is of a more stimulating character than usual. If this be true,

we can account for the great benefit I have seen to result from a persevering use of the liquor or bicarbonas potassæ; but whether my theoretical views be correct or not, I have no doubt that I have witnessed a beneficial effect from the administration of those alkalies. Until late years my use of them has been, I may say, empirical—I looked to the effects and not to their causes—but this is no valid objection; for does not practical medicine owe a very great part of its efficacy to a rational empiricism? and how many potent remedies are there in use, of the mode of action of which we can give no satisfactory explanation? The alkali may act chemically in neutralising acid, thus removing one presumed morbid state of the blood—it may act as a diuretic; nor must we forget its influence over the stomach and liver. But the chief benefit in my opinion arises from its tendency to diminish the undue quantity of the fibrine proved to exist in rheumatic blood. Surely there can be little doubt, that if a gently alkaline condition of the blood is essential to its fluidity; a predominance of alkali must tend to diminish the fibrine. Thus this remedy may correct the two chief morbid states of the blood; and prevent irritation of the muscular ventricular fibres, and of the serous membrane as well. Such is my conviction of the value of alkalies in the diseases now under consideration, that I do not think either Endocarditis or Rheumatic Hypertrophy of the left ventricle ought to be, or can be effectively treated without them.

“There is no class of medicines which produces more decided effects upon the blood than alkalies; at the same time, when judiciously administered,

there are few medicines which are followed by less injurious consequences, notwithstanding their great power. This is explained by their chemical properties, the readiness with which they form comparatively innocuous salts with all the acids, and chemical compounds with animal substances—they have been regarded as the proper solvents of animal matter in general; since coagulated albumen, fibrine, fat, cerebrine, are dissolved by them out of the body; and they also reduce skin, mucous membrane, and other animal matters, to a pulpy mass. Alkalies and their looser combinations convert acid into alkaline urine, and their agency is by the blood upon the whole economy; as shown by the tendency which their long continued use gives to the phosphatic diathesis. Carbonate of soda injudiciously persevered in or prescribed in constitutions unfitted for its use has modified the liquor sanguinis, more especially in reference to its coagulability; and has produced infiltration of the tissues, particularly of the lungs with pneumonia.”—*Mr. Ansell in the “Lancet” of 1840.*

This truthful testimony gives us some idea of the value of alkalies, where there is a thickened state of, or too much fibrine in, the blood; and quite corresponds with my experience. Alkalies may also be of service by reducing the plethora which attends on hypertrophy, and some other cardiac disorders. This plethora is often very obstinate, and will resist the repeated use of the lancet. Blood-letting is but transitory in its effects, while the very loss of blood seems not unfrequently to induce a more active proportionate formation of it; and almost invariably a

mystifying reaction follows. Mons. L'Heritier, in his pathological chemistry, recommends saline laxatives; and more especially the hydrochlorate of ammonia, by the use of which, he says, the proportion of red globules was in three weeks decidedly modified; but the liquor potassæ, the nitras potassæ, and the alkaline subcarbonates, are said to have similar effects.

The deficiency of red globules is met with in chlorosis, anæmia, &c.; here the old routine of chalybeates, good diet, air, and exercise, need not be described: it is generally well known.

The second indication, that of reducing inflammation, is effected by the means well known to the profession; blood-letting, mercury, antimony, &c. &c.

The third indication is very important; for, as I have already said, the paroxysmal palpitations of the heart are not merely highly distressing to the sufferer; but work out most fearful mischief by extending the disease. "It will seldom happen that a severe attack of palpitation or troubled circulation affects a diseased heart without straining and irritating some part of the thickened or altered structure: hence commonly result a local inflammation, which, although slight, may be sufficient to cause a continued aggravation of the symptoms, or repeated returns of palpitation and asthma." If we advert to Case T. H., Valvular Diseases, we shall find, that the diagnostic sound was never distinct till after the frightful paroxysm which occurred in the field at Broxbourne; and then the dyspnœa and dropsy came on with very great rapidity; and death ensued in eight days afterwards. Death might have been delayed for some time if our directions had been duly followed; but that was

not done by our patient. Now for assistance here, we resort to the class of sedatives, and I have tried all of them hitherto known and generally used. No one of them has proved so powerful an auxiliary in my hands as aconite; and the aconite I would now strongly recommend to my professional brethren—to be used cautiously but perseveringly.

Digitalis has been and is the favourite sedative of our profession—it has even been called the opiate of the heart—but it is open to more than one objection; the first and most important is, that it is apt to excite nausea and gastric irritation; often, too, very quickly; and with this gastric irritation *digitalis* ceases to lower the pulse—it raises it—neither will it then act as a diuretic. Now in cardiac diseases it is highly prejudicial to impair the digestive functions; for upon the healthy performance of these functions much of our hope of cure must depend. *Digitalis* possesses great power in diminishing the heart's action, yet it is only adapted to certain cases; for instance, if we prescribe it when the Mitral Valve is diseased; the diminished dyspnœa and the feeling of comparative comfort which speedily ensue, demonstrate the utility of this remedy. We now can understand how this amendment is effected. “In disease of this valve either the flow of blood from the left auricle to the left ventricle is obstructed, or the blood regurgitates from the ventricle to the auricle. After some time the right ventricle tries to overcome the obstruction by increased action, and becomes hypertrophied—the lungs suffer, become congested from the double cause of increased action of the ventricle on one side, and of obstruction in the left

side of the heart—intense dyspnœa results. The whole venous circulation becomes retarded, visceral congestions and dropsy follow. Now the subdued action of the heart, produced by the digitalis, acts beneficially by moderating the force with which the blood is propelled into the lungs; and the lengthened intervals between the contractions of the heart induced by this medicine, allow of the left ventricle being more fully distended in the case of the narrowed opening; while it lessens the frequency of the interruptions to the passage of the blood, and in the case of patency of the opening, the regurgitation is prevented from being so often repeated.” This explanation of the *modus operandi* of digitalis by Dr. Henderson of Glasgow is satisfactory.

But, on the other hand, digitalis would be very prejudicial in cases of patency of the aortic opening as Dr. Corrigan and Dr. Stokes tell us; for as in this disease there is regurgitation into the ventricle, and the greater the regurgitation the more the ventricle enlarges and the disease progresses; so must this remedy, by lessening the number of the heart's beats, give greater opportunity for regurgitation; and thus be prejudicial. For other objections to digitalis see the treatment of Endocarditis.

Another potent objection to the foxglove is its cumulative tendency, by which the life of our patient might sometimes be put in danger; and again, any peculiar gastric irritability in our patient precludes us from even making a trial of it.

Colchicum is another sedative prescribed by some, but it also is liable to excite nausea; and indeed in most cases hardly seems to show any remedial efficacy

till nausea and sickness have set in. Another serious and fatal objection is, that it will not remove the state of blood peculiar to the disorder; although it will often remove the pains of the accompanying rheumatism. Indeed it may be considered only the more dangerous on this account. It also has a cumulative action which has caused death in some elderly people and in some exhausted habits.

I have tried the extract of asparagus, which Mr. Battley was so courteous as to prepare for me; and in two cases I found it decidedly sedative and diuretic; reducing the number of pulsations from 120 to 90 in about thirty hours. It might be worth while to experiment more on this remedy.

Some practitioners recommend the æthers, assa-fœtida, carminatives, &c., to remove the paroxysms of palpitation; and when these paroxysms arise from flatulency and gastric disturbance, they may prove serviceable; but they will be of little use when the paroxysms arise from other causes, while they have not the tendency of effecting a somewhat lasting modification of the heart's irritability, possessed by a remedy, presently to be mentioned—I allude to aconite.

An endermic application of digitalis has been eminently useful in removing palpitations and dyspnœa for a time, as will be shown in some of the following cases.

The hydrocyanic acid is a very valuable remedy in many if not in most cases.

The oxide of silver, too, exerts a happy sedative influence at times: and both the two last remedies are especially useful, in proportion as gastric irrita-

tion is mixed up with the other symptoms; which happens not unfrequently.

Without discussing the utility of any more sedatives, I will express my belief that as a sedative, the aconite, judiciously administered, will be found superior to any other. The whole of its remedial powers have yet to be learnt; and a confidence in them has yet to be acquired. Its action on the organic nerves is decided and incontestable; it will reduce the beatings of the heart, speedily and in a very sensible degree—it can be easily watched—its influence is not dangerously cumulative—it will not nauseate—and it is a remedy of proved value in obstinate rheumatism.

Besides these advantages, I have no doubt that it has considerable power as an antiphlogistic; that it may, under certain circumstances, be properly substituted for the lancet; and that under its use the buffy coat will disappear. Now any remedy which will prove an effective substitute for the detraction of blood, will be found nearly invaluable in certain cases of heart disease—namely, in all such as occur in weakly persons, and yet are accompanied with great excitement of the circulation. In such delicate habits of body, there are two great sources of danger—the one arising from the very rapid progress of the disorder, unto, perhaps, irremediable changes of the delicate structure affected, and the consequent necessity for adopting the most energetic measures of depletion, &c., to counteract; the other, arising from the patient not having strength enough to bear the exhaustion resulting from the active treatment which has been adopted; so that although

the medical man may have the satisfaction of witnessing the reduction of the disorder; he yet may find his patient shortly after attacked by tubercular consumption, or some other disorder. Under such circumstances, aconite will be found the very substitute we want; and a proper trial will soon convince that we may thus avoid detracting many an ounce of blood which otherwise must flow.

Belladonna is a sedative of similar class, but I have never observed the buffy coat to disappear under its use, as it will when aconite has been given.

Aconite then may be depended upon as a substitute for the lancet in those cases of heart disease where there is excitement with an inflammatory tendency, yet combined with a general want of power; and such cases are of peculiarly anxious and difficult management by the lancet. Some favourers of this little instrument will say, the patient had as well die of the remedy as of the disease; such an answer is neither true nor sufficient. But if we have a patient of sthenic habit, and in whom there is absolute plethora, and consequently where the blood-vessels require to be relieved of some of their circulating load, then there is no efficient substitute for the lancet.

It has been proved that by the use of aconite, the pulse has been reduced in forty-eight hours from 100 or more to 80 beats. This remedy seems therefore well adapted to hypertrophy; to inflammatory complications; and especially to *prevent palpitations as well as to remove them*. It will also induce a permanent diminution of the heart's ac-

tion, and of its irritability—whether the habit be debilitated or not—neither lowering the strength nor causing nausea; yet effectually quelling inordinate action.

But some points must be attended to, before this medicine can be said to have been fairly tested—it is to take the greatest care in having the preparation good at first; and in preserving it as much as possible from the action of heat, light, and the atmospheric air. If this be not done, the medicine becomes inert, failure and disappointment will ensue; and the drug will be thrown aside, perhaps for ever, as utterly worthless. I have prescribed both extract and tincture; and both have answered my expectations, while they were preserved in proper condition. The extract should be prepared in vacuo, and little heat be employed, otherwise the peculiar virtues may be destroyed during the preparation; it thus becomes of importance what chemist we employ.

In illustration of the disappearing of the buffy coat, under the use of aconite, I will here introduce a case of aneurism of the ascending aorta, which is also in itself interesting in one or two respects.

CASE I.

CASE OF ANEURISM OF THE ASCENDING AORTA, WITH HYPERTROPHY OF THE LEFT VENTRICLE.—Mr. J. R., ætat. 48, or thereabouts, had always appeared to enjoy the best possible health until some time before September, 1837, when he complained of a pain in his right shoulder-blade. About September, 1837, this became worse. It was attributed to hepatic disease, though there were no hepatic phenomena—he himself attributed it to a fall from a chaise. In January, 1838, a swelling was observed, and

was pronounced to be aneurism of the aorta. The swelling increased in size, and about March, 1838, the integuments were tense and shining. Sir Astley Cooper and several medical men prescribed for him. Venesection every second week or oftener was practised, and a diet strictly low was adopted. His powers soon were lowered; and, from a stout, good-looking man, he became very thin, weak, and irritable, while his face showed that anxiety which is peculiar to heart disease. In April, 1839, I saw him, and found a large pulsating tumour, extending over a great part of the upper sternum; which bone had been largely absorbed. At one point there was a thinness of the integuments, which threatened, ere long, a fatal hæmorrhage. The blood was always buffed after every V.S., and there was considerable action of the left ventricle, with occasional distressing palpitations. The tumour was defended by a plaster of Paris cast, covered with wash-leather. This case was evidently fatal, sooner or later; but it appeared to me that his strength had given way under the treatment, which could no longer be continued, while the palpitation augmented the danger of a rupture of the tumour; and it must be added that it was of great importance to his family for the fatal moment to be delayed as long as possible. I ordered a pill of Extr. Aconit. g. $\frac{1}{12}$, and Pil. Hydrarg g. j. ter quotidie, with occasional aperients. I received a report of his state from his medical attendant, who says, in June, 1839, "Our patient took the twelfth of a grain of aconite for ten days. I increased it to a tenth. Then ascertaining that he became irritable, which I attributed to the blue pill, it was withdrawn; and the aconite augmented to an eighth of a grain. I should here remark that his pulse were *decreased in number of beats, and the pulsation of the aneurismal tumour was with less impetus*. On the 21st May he took $\frac{1}{6}$ of a grain. No inconvenience has occurred from the dose, he is much improved in appearance; and it is *remarkable the change in the aspect of his countenance being almost free from anxiety*. There is no difficulty of breathing, nor any pain in the head; and he has certainly surprised me very much. A very marked difference has been shown by the blood the last time I bled him; on every occasion before, it has invariably presented all the indications of highly inflammatory blood; but I was particularly struck by the dissimilar state of it on the last extraction, *it was free from buffy*

coat and not cupped, the coagulum was firm ; and there were fair proportions both of it and serum. From this statement, you will agree with me that the Aconite has been of service." The sequel of this case was, that the swelling continued to enlarge, the spot where the integuments were thin became red about August 2, 1840; and on the 16th of August, when the tumour was as large as a good-sized cocoa-nut, and the threatening spot had become red, then dark red, at last nearly black, the tumour sloughed and burst. This, though ultimately fatal, was an interesting case. The insidious nature of the attack, by merely a pain in the right scapula without other signs of hepatic disorder, or of Rheumatism, admonishes us that under such circumstances we should not content ourselves without examining by the stethoscope:—the failure of the Valsalva treatment was shown:—and the benefit which speedily followed the use of the Aconite was manifest in the diminished impulse of the tumour; in the reduction of the pulse; in the considerable subdual of the irritability and palpitations; and above all, in the depriving the blood of its buffy coat when V.S. and low diet had failed to do so. By the change of treatment, time was given, I verily believe, for pecuniary benefits to accrue to his family ; and his feelings were those of comparative comfort. Had the Aconite been sooner used, or before absorption of the sternum or great enlargement of the tumour had occurred, one might have hoped for still more strikingly beneficial effects ; and, as it was, he might have lived longer had he been more obedient to his doctor than he was, with respect to abstaining from exertion, &c. This case shows that the lowering or Valsalva treatment induces great debility and irritability, without any corresponding benefit ; and that while we are trying to moderate the excitement of the circulation, we must endeavour to maintain a healthy action of the nutritious functions ; for by bleeding and too low diet, we reduce the quantity of coagulable matter in the blood so far as to prevent, the salutary deposition of layers of coagula on the inner walls of the aneurism, to which deposition we must look for safety and for recovery. The case may be received with the less suspicion, because the influence and working of the Aconite have been watched, and related by one who is a stranger, both to me and to my opinions.

CHAPTER III.

PERICARDITIS.

THIS form of heart-disease seldom exists without Endocarditis—the latter either as cause or concomitant. Pericarditis seldom precedes Endocarditis—for the signs of the latter are usually first to be met with. The inflamed membrane pours out serous or albuminous fluid, and if in great quantity, our diagnosis, through percussion, may be made without much difficulty; but if in small quantity, we may not be able easily to satisfy our minds. This disease has been divided into three stages—the first, wherein the membrane is inflamed and dry: here there is nothing diagnostic; the second, when effusion is taking place, and here we may have for a short time a friction sound, which masks the first and second normal sounds, and an increasing dulness on percussing the cardiac region, extending up higher than the third rib even; the third, where the effusion has terminated, or adhesion has taken place. Of the first stage we have no sign, excepting the general symptoms of Pyrexia, anxiety at the præcordia, and pain, perhaps, on pressing between the cartilages of the left fourth, fifth, and sixth ribs, and the epigastrium. The diagnosis of the second stage de-

depends on the quantity of fluid secreted; and of the third stage, the diagnosis depends on the same circumstance. There is no certain sign of adherent Pericardium, unless a double adhesion have taken place, viz., of the Pericardium externally to the sternum, and to the Pleura Costalis, and internally to the heart; when the heart may be seen and heard to beat over a larger surface than usual, and the intercostal spaces will be drawn in, more or less, at each systole.

We may generally also hear a single or double bellows-murmur; but if we do, we may be assured that we have a case of Endocarditis, as well as of Pericarditis before us.

The Pericarditis attending Rheumatism is often latent, unfortunately, and may pass undetected for some time; and, indeed, the heart must act with a certain degree of vigour for the friction-sound to be heard at all—for if the heart be enfeebled, its contractions will be less vigorous; and the sounds made by the roughened pericardial surfaces will escape the most experienced and most acute ear. The diagnosis then is often difficult. In many acute cases, the onset of the disease is strikingly marked by the peculiar countenance, which conveys an expression of great distress; and leads at once to a suspicion of the state of the case. This sign, when present, would alone induce me to resort to energetic measures, if it occurred during a rheumatic seizure. Percussion gives us no help in diagnosis in the early stage; but on the second day generally, we may, by the stethoscope, hear a superficial rubbing to and fro, or friction-sound, with both the systole

and diastole of the heart. It is best heard about the middle of the sternum, and to the left of the mesial line; and it may be heard over a small portion of the heart's surface, or over the whole; but it is heard only over the heart's surface, and nowhere else. The character of the sound varies—it may resemble the rumpling of silk or parchment, the creaking of new leather, the sound of a rasp, or it may be merely a bellows-murmur. When the case is soon fatal, this sound never ceases during the patient's life; but in others, it is audible for a few days; then, as the effusion of fluid or adhesion of the pericardial surfaces takes place, it disappears, and does not return. When Endocarditis accompanies this disease, a bellows-sound is also heard, and may be heard at the same time with the other; but at times, the friction sound is so loud as to drown the bellows-murmur, which latter is heard only after the former has ceased. When the friction-sound terminates in adhesion, the patient seems to recover for a while—but ere long the heart's action becomes labouring, and fatal disease results.

There is a difficulty in making out a diagnosis of adherent Pericardium. One physical sign has been mentioned by Mr. Aspland, in the *Medical Gazette*, which, in conjunction with the retraction of the intercostal spaces already mentioned, may help us. He says, “In a healthy individual sitting erect, the apex of the heart strikes at two inches below the left nipple, and one inch nearer the sternum. If lying on the left side, it strikes in a line vertical with the nipple; if lying on the right, it strikes in a line with the edge of the sternum. In

adherent Pericardium, this mobility is lost. The apex of the heart does not change its place of beating by any change in the patient's position." Now when the friction-sound resembles a rasp-murmur, we might mistake it for that sound which is produced during Valvular disease; but we shall find that in Pericarditis the sounds are limited to the præcordial region; they are superficial and sudden in their appearance; while the other sounds are transmitted up the Aorta, and are permanent. It is said that similar friction-sounds may depend upon Pleural inflammation; to ascertain this, direct the patient to hold his breath; when the sounds will cease, as they are synchronous with the respiratory movements: in Valvular disease they are always heard, and do not depend on the respiration.

When the effused fluid is considerable, the heart's action can neither be seen nor very distinctly felt; when moderate, the diagnosis will be facilitated by percussing the patient when leaning forward. There will be a dulness or loss of sound on percussing, in proportion to the quantity of fluid; and this dulness of sound may occupy the inferior third, or even half of the anterior part of the left side. Besides this dulness on percussion, by the stethoscope, the heart does not seem to strike the ribs immediately, but through fluid; and its impulse seems undulatory, and does not coincide exactly with the sound of the ventricular contraction.

If we can succeed in limiting the line of dulness when the patient is lying down, and then percuss when he rises up or leans to one side, we shall find

the line of dulness to vary with the change of position.

The general signs may be various, or the disease may be latent altogether; and this latter circumstance is a source of great danger. We may see the usual signs of Pyrexia; dyspnœa; orthopnœa; jactitation; pain, striking through the region of the heart to the back. Palpitation, with increased impulse; pulse irregular, quick, vibrating, and towards the end, intermitting; a sense of oppression at the epigastrium; a catch in the breathing; dry cough; inability to lie on the left side; the local pain is increased by a full inspiration, or by pressure between the præcordial costal cartilages, or by pressing upwards against the diaphragm; rheumatic pains—fainting does not accompany simple Pericarditis—furious delirium. The last symptom does not depend on disease of the brain, but on an affection of the reflex function nerves; and some cases are on record, where the delirium was so prominent a symptom as to mask the Pericarditis altogether.

Professor Forget has paid considerable attention lately to adhesions of the Pericardium, and his conclusions are the following:

1. Pericarditis often terminates in general, or partial, adhesions of the heart, with its enveloping capsule.
2. These adhesions seem to succeed more especially to the dry form of the adhesion, *i. e.* without effusion.
3. They are a potent and very frequent cause of disturbance of the heart's actions.

4. The disturbances thus induced are usually the more serious and dangerous, in proportion as the adhesions are the more recent and the more extensive.

5. The characteristic signs of recent general adhesion, are the force, the tumult, and confusion of the beats of the heart—the frequency, smallness, and irregularity of the pulse—the dyspnœa, præcordial anxiety, and tendency to fainting; the serous infiltration of different parts; the pulmonary congestion; visceral engorgements; cyanosis, &c.

6. The sign so much insisted upon by some medical men, viz., depression of the epigastric region during the contraction of the heart, has not yet been observed in a single case of pericardial adhesion in our practice; and yet we have recognised the existence in some other diseases of the heart.

7. Not any of the foregoing symptoms are diagnostic of adhesion, and it is rare to find them all combined in the same case.

8. Adhesion of the Pericardium may prove fatal in the acute state, or in the chronic state by inducing some other lesion, such as hydrops, pericardii, &c.

9. The more ancient the adhesions, the less is life menaced—even scarcely any appreciable embarrassment is caused thereby to the movements of the heart.

10. The only advantage of general adhesions is, that they serve to diminish or even to abolish the tendency to future Pericarditis, just in the same manner as the provoked adhesion of the tunica vaginalis prevents the recurrence of commi hydrocele.

11. The presumed relations of adhesion of the Pericardium with Hypertrophy of the Heart, are certainly very reasonable ; but the presumption awaits the sanction of demonstration.

12. The circumstance of adhesion being a frequent termination of Pericarditis, is an additional motive for prompt and vigorous treatment to subdue the inflammation when discovered.

13. The diagnosis of the formation and existence of pericardial adhesions, may be useful in many respects; it may enable the physician to arrest in time the progress of the adhesive inflammation, or obviate the aggravation of those accidents which adhesions are apt to induce in various maladies, as well as in a state of health.

With respect to the 9th conclusion, one would, on reflection, think it just; but I have never met with any case in practice, nor in necroscopical investigations to confirm it—on the contrary, wherever this adhesion has taken place, there has been usually a great, if not ultimately fatal, embarrassment of the heart's action; and in no case of the kind have I failed to mark the labouring action of the heart, and also the general signs of such a state of circulation. The 10th again is not confirmed by experience. The more correct statement would have been, that general adhesions prevent effusion, if Pericarditis should again attack the same patient; neither can we concur in the analogy drawn between the Pericardium and the tunica vaginalis testis. It is true, a similarity, or rather identity of structure and function, would seem to justify such analogy; yet by it one might be led to forget an important differ-

ence between the two; for while the Pericardium should act within its envelope with the utmost freedom, the other will cause no inconvenience, even if universally adherent, and the testis will perform its functions equally well.

The latter part of the 11th conclusion seems to me negatived by our experience; for I think the occurrence of the Hypertrophy, in consequence of adhesion of the Pericardium, is to be frequently witnessed in practice; and in the latter part of his 13th deduction, the professor himself hints at such consequences. With the two last portions of the summary one must all agree; although, according to the professor's 7th observation, there are no signs by which we can establish our diagnosis of adhesion.

If we look at Pericarditis under three heads; before effusion; or with effusion of lymph, or with liquid effusion; the diagnosis has been thus summed by Dr. Williams—first, or before effusion, there will be a loud or prolonged first sound; strong and abrupt impulse; a loud second sound; with a radial pulse, strong and various in frequency; while percussion is natural:—second, the first sound is masked by the attrition-sound; impulse tumultuous; second sound masked by a friction-murmur, heard over the whole cardiac region; radial pulse frequent; and an increased dulness on percussion:—in the third, the first sound is at first drum-like, then becomes obscure; no impulse; an impaired second sound; a radial pulse frequent, and irregular often; dulness extensive.

Attrition-murmurs may be mistaken for Valvular murmurs—but attrition-murmurs cannot be heard at

all up the Aorta like the murmurs from disease of the semilunar valves, and the mitral-valve murmur is loudest at a particular point; whereas the attrition-murmurs are louder at other parts, and wherever generated; they are rougher than the valvular murmurs, and can be heard through them if existing simultaneously. A murmur, with the second sound, if rough, rasping, or creaking, is from attrition; for valvular murmurs, with second sound, are feeble, on account of a feeble diastolic current. Attrition murmurs are attended with vibratory tremor, while Valvular murmurs are not. The former, too, are apt suddenly to change their situation, which is almost pathognomonic; because Valvular murmurs change little in character, and not at all in situation.

Andral, in his excellent "*Clinique Medicale*," divides cases of acute Pericarditis into three kinds—the first will point inflammation of the Pericardium, announced by local symptoms, which render its diagnosis sufficiently easy; the second comprises cases in which there is no other local symptom than greater or less dyspnœa; so that it is only by a process of exclusion that the existence of Pericarditis can be ascertained. In the third class are placed those cases in which there is not even dyspnœa; and in which there were no other symptoms than great acceleration of pulse, nervous phenomena of a severe kind, sudden prostration of strength and death.

The causes of Pericarditis are exposure to cold and damp; Rheumatism is by far the most frequent of all; and we shall find Pericarditis to supervene upon slight cases of Rheumatism, as well as on severe ones—Scarlatina, Measles, and Pertussis. The oc-

currence of Pericarditis may be simultaneous with that of the Rheumatism, or it may seem to be a consequence, as if from metastasis—but there is no metastasis; for, to constitute translation of morbid matter, the disease should cease in the parts first attacked, which it does not in many cases. Besides, we should take a more enlarged view of the pathology; when we shall be led to see that the blood itself is not in a healthy state, which state of the blood may give rise to both the Rheumatism and to the heart-affection.

PROGNOSIS.

The terminations of this disease are in resolution, in adhesion, and in chronic Pericarditis, or Hydropericardium. If the disorder is only just begun, if not more than twenty-four or thirty-six hours have elapsed, we may, by a vigorous treatment, promote a recovery; but if not, our prognosis must be guarded. If Endocarditis be mixed up with the Pericardial inflammation, the case is one of most imminent danger; for reasons hereafter to be detailed. It is said that when resolution occurs, the effused lymph and fluid are absorbed; but a little lymph remains, eventually constituting white spots of cellular tissue, which sometimes form the ground work of cartilaginous or osseous transformations; granulations, and vegetations too, have been mentioned by authors; and also that these depositions have given rise to attrition-murmurs, and that such murmurs are compatible with health. This we must recollect, as we might otherwise form a false opinion of such sounds.

Adhesion to the Pericardium, I believe, to be invariably fatal, sooner or later. There is a cessation of the active signs, and perhaps a seeming recovery; but Hypertrophy, ere long, makes its appearance, the heart continues to labour heavily, and a fatal result at last ensues. In thirty-three fatal cases of Pericarditis, Bouillaud tells us, that Hypertrophy was manifest in all. There may be cases of adherent Pericardium, where the adhesions have been partial, and of small extent;—have become elongated; and have offered but little impediment to the heart's action. Such persons may enjoy pretty good health; but I have never met with such cases.

As to chronic Pericarditis, it is characterised by an effusion of more or less fluid into the membrane, and such fluid has been said to be absorbed, I believe; but I have never witnessed any such cases: nor do I believe that a membrane, the secreting texture of which has been so altered as the Pericardium must be in such cases, will allow of an absorption, active enough to remove the fluid effused.

Pericarditis is sometimes combined with Pleuro-pneumonia, and such combination is considered most destructive. I deem the combination of Endo and Pericarditis to be much more so; because the treatment of Pleuro-pneumonia and Pericarditis is similar; but not so, when Endocarditis is present.

TREATMENT.

This must be as vigorous as the strength of the patient will allow. Bold venesections on the first

day, then cupping and leeching as freely as possible—this is, supposing there is no Endocarditis. “Activity in the first instance, is an ultimate source of economy to the strength of the patient; for the disease is subdued at once, and the protracted continuance of depletory measures, the most exhausting to the constitution, is rendered unnecessary.”—

Dr. Hope.

It is not the total quantity of blood lost that is of so much importance; as the quickness with which it is taken, and the effect produced on the inflammation thereby.

But it is agreed that blood-letting will not alone suffice; and that we must try to get the system under the influence of mercury, as soon as possible; Calomel, grs. iij., or grs. iv., with Aconite and Opium; the latter, to prevent catharsis, must be given every third or fourth hour, till the gums become tender. During the day I order alkalies; but do not begin them till the evening of the second day; by which time the mercurials may have had time to exert some influence over the system.

This tenderness of the gums must be kept up for four or five days, or longer if the symptoms persist. It has been deemed difficult to affect the system by mercury in this disease; but with an added opiate to prevent the mercury from acting on the bowels, I have not encountered any difficulty. Sometimes mercury cannot be borne at all, when given by mouth, on account of irritability of the bowels, or from some other cause; then inunction of ʒij. to ʒss. Ung. Hydrarg. Fort. every night and morning

into the armpits and groins will soon effect the same purpose.

The Aconite will aid materially the lancet; will still the palpitations; and also act as an important auxiliary antiphlogistic.

Blisters and other counter-irritants are of service. Hot spirits of turpentine, laid on by old linen, will be preferable to blisters, if we want to use the stethoscope frequently. Blisters in succession must be applied to remove pain if it continues; and they are useful to promote the absorption of the effused fluid; where pain still resists, the following plaster has been advised:

R. Antimon. Potassio-tartrat. $\mathfrak{z}$ j. Empl. Picis. Comp. $\mathfrak{z}$ iv.; Ceræ $\mathfrak{z}$ ij. fiat Emplastr.

Where rest is necessary an opiate or some anodyne may be given at night, and sedatives may be varied if nervous irritability require them.

The diet should be diluent and antiphlogistic.

Chronic Pericarditis must be treated by counter-irritants; an occasional cupping or leeching; by mercury; and by obviating urgent symptoms.

As to Paracentesis Thoracis in Hydropericardium, I cannot anticipate any success from it. It would remove the fluid certainly; but the membrane would again secrete fluid; and if we injected any irritant, as we do in Hydrocele, we should gain nothing by adhesion if it were to form. All we can do, is to palliate urgent symptoms. Mercury may be tried, if it can be borne—blisters and other counter-irritants may be useful. The patient generally dies from constitutional exhaustion, with some affection of the left ventricle.

Any person who has once suffered from Pericarditis, should be careful to avoid a relapse; for such persons are liable to a recurrence of the inflammation: but if a second attack were experienced, our treatment must not be so vigorous as in the case of a first attack; and fortunately it is found that second attacks are much less dangerous to life than the first; and are recovered from more easily, and with less energetic measures.

The following cases are illustrative of the melancholy progress of Pericarditis, and of the combined forms of Endo and Pericarditis. The diseases had not been treated by me in the early periods; and I therefore do not know what treatment had been adopted in the commencement. No cases of recovery from Pericarditis under judicious treatment need be appended; as any one who has read the foregoing observations on treatment, can easily imagine what was done.

CASE II.

PERICARDITIS AND ENDOCARDITIS FOLLOWING RHEUMATISM.
—James Fletcher, ætat. 19, of weakly habits, was admitted June 30, 1836, with acute articular Rheumatism. I ordered Submur. Hydr. gr. ij., Extr. Hyosc. gr. iij., notte quotidie, and a mixture containing Sulphas Sodæ, Carbonate of Soda, and Vin. Sem. Colchic. On the 13th July these pills were discontinued, but he continued taking the mixture until the 21st of July, when he was discharged quite well in every respect; the chest was examined with care.

On the 16th January, 1839, he was again admitted. About ten days back he was attacked with Rheumatism; but so slight that he was at his work as usual. On the 11th or the 12th he sat down on some damp ground, when he felt very ill, and chest-symptoms

commenced. Present state; great dyspnœa; pulse weakish, 130; heart's action very labouring, with a double bellows-murmur; no distinct to and fro sound, yet there was some other slight murmur beside those mentioned; pain on pressing between the cartilages of the left cardiac ribs; dulness on percussion in the cardiac region, up to top of the second rib; thirst; red urine; and pyrexial tongue; hands and arms immoveable. R. Potass. Carbonat. Sodæ Carbonat. āā ʒj.; Aq. Menthœ ʒj.—6^{tis} horis. R. Chlorid. Hydrarg. gr. 32; Antim. Tart. gr. j.; Opii. Pulver. gr. j.; Ext. Aconit. gr. ij.; ft. ope. syr. pilul. 8 cap. j.—4^{tis} horis. Fiat V.S. ad. ʒxij.; appl. Empl. Canthar. later dextr. I seldom order blisters to be applied over the diseased spot, that I may be able to examine the part at any time, which the tenderness from the blister might prevent. On the 19th the chest-distress was relieved. Jan. 20, better; pulse 90; pyrexia reduced; gums beginning to be tender—omitte. pil. 22nd. Thinks he got some cold by exposing himself in bed; pulse 96; pain in breathing; more pain in hands, wrists, and shoulders—Mist ut ante—Calomel gr. ij.; Pulv. Ipecac. C. gr. v., night and morning. 24th. Much better again; still some pain on a deep inspiration, Cucurb. Cræ. 27th. Some cough; add 2 gr. of Acid Hydrocyanic to each does of his mixture. 30th. The pulse intermits every third and fourth beat alternately, the intermission lasting during one beat only; pulse 86; heart's action like the pulse, but subdued; murmurs nearly inaudible, the breathing still quick; crepitous rale over right middle lobe; pain on inspiration: V.S. ad. ʒxij.; Empl. Canthar. R. Solut. Sodæ Citrat ʒj.; Antim. Tartar. g. $\frac{1}{2}$; Magnes. Sulphas. ʒj.; Syr. Papar. Alb. ʒj.; ter die. He got rid of his unfavourable symptoms. On the 14th March having been allowed to go into the garden, there was a fresh attack, pulse 120, and considerable excitement; a blister and Calomel gr. ij.; 3^{tis} horis and saline medicines. He recovered from this attack; and on April 11, 1839, he was discharged, and made an out-patient; looking well, and his general health good; but there were still palpitation and dyspnœa on exertion, showing that the heart was not sound; and he was cautioned as to conduct.

On the 11th March, 1841, he was readmitted, with various pains of rheumatic nature in his upper and lower limbs. There were the usual signs of Hypertrophy of the left Ventricle, with Dilatation; bellows-murmur with the first sound, and loudness of it;

the heart's action is violent to the eye, and it beats over a larger extent of surface than usual; pain in cardiac region; pulse 108, and fullish; a sharp cough (from a cold); the liver extends below the ribs, and is decidedly enlarged. A pill of calomel, muriate of morphine and aloes every night and morning, and a mixture of alkaline carbonates with hydrocyanic acid and R. Digitalis; also venæsectio according to the strength of the pulse.

On the 27th of March a seton was tried, but it only seemed to irritate; and it was soon removed. On the 1st of April the aconite was given, but little relief ensued. Perhaps, however, the preparation of aconite given had been kept a long time, and was not to be depended on. On the 9th of April, about quarter past four, P.M., Fletcher died while quietly sitting in his chair.

The next day the body was examined by three medical gentlemen and myself. There were some old adhesions between the Pleuræ, Pulmonalis, and Costalis. The heart was amazingly enlarged; the Pericardium thickened, and so universally adherent, that much careful force was required to separate the two surfaces—the adhesion extended to every part of the Pericardium; even high up the great vessels. The left ventricle was enlarged—both hypertrophied and dilated to a great degree; the columnæ carneæ of a strikingly large size; the right ventricle nearly normal; the valves healthy; the liver large, full of blood; in fact, in a congested state, as is usual where there has been a difficult transmission of blood through the heart for some time; and accordingly this symptom is not observed; until after the disease has continued for a considerable time; except where the right cardiac cavities are implicated; then it becomes an early symptom. This case of Pericarditis shows its melancholy tendency towards death, when once effusion has occurred, and no absorption been induced. The adhesion of the Pericardium only delays the event. Of this adhesion, although it was so complete, there was no certain sign during life. The hypertrophy of the left columnæ carneæ might have been owing to Endocarditis, or they might have become enlarged, *pari passu*, with the parietes of the ventricle. Here the inflammation of the Pericardium was of no longer standing than about four days; and yet, although the patient was actively treated, and was thrice mercurialised, changes ultimately fatal, and bidding defiance to remedies, had already taken place.

CASE III.

PERICARDITIS AND ENDOCARDITIS, FATAL IN EIGHT DAYS.—On the 3d of July, 1842, I visited Master B., ætat. 10. Since the 22nd of June last, he had been suffering from acute Rheumatism *i. e.* Rheumatic fever. Last Tuesday, the 28th of June, he was seized with certain chest-symptoms, which have continued to the present time. His present state is a pain over the cardiac region, near to the heart's apex, supposed to be muscular; but the anxious face; suspirious breathing; and peculiar countenance, proclaim cardiac disease. There was a double bellows-murmur, but no to and fro sound. He lies on his back, and cannot lie on his left side; no pain on pressing between the costal cartilages; pulse quick, and rather feeble; respiratory murmur normal; some pyrexia, but less than there has been. He had been actively treated with leeches and blisters; but the former always weakened him very much, I was told. Salines, with calomel, grs. ij., and Pulv. Ipecac. C. grs. iij. 6^{ti}s. horis.

July 4.—No soreness of gums; though eighteen grains of calomel have been given; state much the same as yesterday. Calomel, grs. iij., Pulv. Ipecac. C., grs. v., 3^{ti}is. horis.

July 5.—A better night, and less cardiac impulse; but the *pulse* 150; gums tender. On the 6th he died; and on examination twelve hours and a half afterwards, we found a great quantity of serous fluid in the left pleural cavity; also a great deal in the Pericardium; the Pericardium adherent in several points and lines, but not generally; a deposit of lymph near the base of the heart; the left ventricle very large, and its parietes thick and fleshy; some organised or fleshy-looking masses in the ventricles, especially the left. There were some patches of redness on the Endocardium, near the aortic orifice; these patches could neither be scraped off nor washed away.

This case is a good negative illustration, if I may so express myself, of the value of time and energetic measures in treating this disease. This boy's fate was probably sealed by the 30th of June; perhaps the thoracic symptoms *deceived by their seeming mildness*;—but when heart-symptoms arise during Rheumatic fever, such as those in this patient,—we should be as energetic in treatment as the patient's strength will allow. The mercury was begun too late to permit a hope of recovery.

CASE IV.

CASE OF PERICARDITIS, ADHERENT PERICARDIUM, AND HYPERTROPHY.—W. B., ætat. 5, of fair skin, and strumous habit, was brought to me on the 22d of April, 1840. He has suffered from Pertussis five months ago, and soon after the acute symptoms had passed away, he began to feel ill, and so continued to the present time. I did not attend him, and do not know the details of the case.

Present state—extreme dyspnœa, indeed orthopnœa; face highly injected, but lips of dusky red hue; a strong hypertrophic impulse of the left ventricle, with a whirring murmur at every systole; pulse 120. I thought I observed some slight retraction of the spaces between the cartilages of the left cardiac ribs, close to the sternum, with every systole; dulness on percussion, over an unusually large space, and the heart beats over a large space—both to the left and right of the sternum; much cough; bowels very costive; palpitations very violent at times. Although with little hope of doing any good, I prescribed a mixture of Infus. Sennæ, Liq. Potass. R. Digital. and vehicle; and a nightly powder of Calomel and Pulv. Ipecac. Comp.

On the 29th, the cough was less teasing, and he felt better; but there was no real amendment. On the 22d of May he died, and Mr. E—— and I examined the body. There were a few scattered tubercles in the right upper pulmonic lobe; the heart was amazingly hypertrophied; and after squeezing out the fluids and coagula, it weighed seventeen ounces and a half; it seemed to fill the entire chest; the Pericardium was dark-red here and there, and adhered to the sternum and ribs by old striæ of adhesion; and the inner surface was so agglutinated to the heart everywhere, that very careful dissection was required to separate the two surfaces; the parietes of the left ventricle were very much thickened, and the columnæ carnæ were very large.

The valves were all sound; the heart must have been from three to four times larger than its natural size; the boy was of thin and slender make. Here was a case of Pericarditis from Pertussis, fatal by adhesion of the Pericardium in about four months.

CASE V.

CASE OF PERICARDITIS, AND CONSEQUENT HYPERTROPHY.—July 11, 1833.—J. C. was admitted, aged 22; been ill seven months, with rheumatic pains at first, which confined him to his room one week, but he generally was able to do some work; was not sensible of any dyspnœa, nor of any heart-disease, till in bravado he tried to wheel too heavy a barrow; became ill, and ever since he has felt ill, with palpitation, shortness of breath, and stitches in the left side. His present state is great anxiety of countenance; pulse, frequent and full, with a jarring feel; *bruit de soufflet*, with first sound; some impulse over whole heart, which beats over too large a surface; and I thought there was enlargement of the right ventricle, with effusion into the Pericardium, though the heart did not seem to beat in a bag of fluid. For the last fortnight, the symptoms, which had never ameliorated, became aggravated; and there was a purring vibratory tremor to be felt by the extended hand, all over the site of the ventricles. He died on Aug. 15; we found traces of an old Pericarditis; adhesion of the Pericardium at the base, with lines of deposit on the cardiac pericardial surface; there was considerable dilatation of the right auricle, and Hypertrophy of the left ventricle; the cardiac cavities were filled with concrete fibrine, and some polypi were intertwined amongst the left cordæ tendineæ. The enlarged right auricle here deceived me; and I thought there was pericardial effusion. From the vibratory feel, I was assured there was polypous or fibrinous concretion; for I have never seen these last to exist, without such a jarring to the hand as was here felt. Here the Pericarditis killed in about six months. The bellows-murmur here was caused by the Hypertrophy of the left ventricle; and the Hypertrophy is the result of the Pericarditis.

CASE VI.

PERICARDITIS RHEUMATICA FATAL IN FOUR YEARS.—Nov. 23, 1838.—When visiting other members of his family, I was requested to examine Mr. Wm. H., ætat. 28, of strumous habit and consumptive diathesis;—he has been, and is still, a hard drinker. I found that he had applied to me for advice on the 28th of September, 1835, when he was suffering from hepatic dyspepsia; by which I mean dyspepsia proceeding from liver congestion or disease.

There was still much dyspepsia; the urinary secretion disturbed, anorexia; confined or variable bowels, &c. He recovered from this state so as to be able to attend to his business as a farmer; but he continued his drinking habits in spite of all warning. He did not tell me in 1835 of his having suffered from Rheumatism, and my attention was not then directed to his chest.

My notes of his present state are these: moribund; liver and stomach fearfully out of order; upper lobe of left lung non-resonant and bronchophonic, upper lobe of right lung non-resonant with gargouillement, middle lobe also non-resonant, orthopnoea;—bellows-murmur, and a thrilling with first sound; heart acts with too much impulse and noise; pulse quick and small; some hæmoptysis, about 3j. of blood thrown up; preternatural loudness over the cardiac region, but not very distinct as to limits. Treatment here seemed useless; but I ordered some Cyanuret of Potassium, Pil. Hydr. Pil. Scill. C. and Morphine.

On Nov. 30 I was sent for to his *post mortem* examination; and his ordinary medical attendant and I found the Pericardium covered outside with coagulable lymph, which was deposited in irregular lines and prominences on the cardiac Pericardium;—almost all over it. It appeared to me that adhesion of the two surfaces had been about to take place when another effusion supervened; and first elongated the striæ of adhesion, then broke them off. The heart was twice its natural size; the ventricles dilated; a large lump which looked like fat was found in the right ventricle—no disease of valves; the right lung tuberculated down to the lower lobe, which last was only partially pervious to air; the right Pleura Costalis agglutinated to the Pleura Pulmonalis;—the left upper lobe full of tubercles, extending low down; the scalpel seemed to be cutting through cartilaginous knobs; the liver congested, some tubercles in it, and one-third too large; the kidneys also congested and enlarged; the Malpighian bodies and interior sound, excepting the congestion; the gastric mucous membrane here and there congested in patches; pylorus small, but not diseased; the cartilages and ribs were soft, and easily cut.

This case shows the ravages made by disease when neglected. The patient was only 28 when he died. Death seems to have followed the adhesion of the pericardium in four years. He was of consumptive habit; and had been accustomed from boyhood to

drink hard ; thus the stomach and liver first became disordered, then tubercles were deposited, and a purulent or tuberculous expectoration followed. He then suffered from Rheumatism, which caused Pericarditis; and that caused Hypertrophy. He had consulted three physicians and one surgeon in London; but the wife thinks only one suspected disease of the heart—she is not sure that any one did. Mr. H. was always an intractable patient.

CHAPTER IV.

E N D O C A R D I T I S.

THIS form of heart-disease is the most interesting of all; and for several reasons. First, because it must be viewed by the modern pathologist as a primitia or primigenial affection, out of which arise other morbid phenomena of most distressing character; subversive of almost all future comfort, and often destructive of life. Secondly, on account of its curability, if taken in time and rightly treated. Thirdly, because of its pathological character. The discovery of its nature appears to me to be one of the greatest in this department of modern practical medicine, and has furnished a clue which was much wanting.

It is not my intention to describe the anatomical characters of this disorder,—they are to be found in several works; neither need I enter further into the pathology, than by referring to the observations already made in the chapter on Pathology and Treatment, with respect to Rheumatism. My readers will there see that I attribute the supervention of this disease on Rheumatism:—first, to an excess of fibrine, which has been proved to exist in the blood of rheumatic patients; secondly, to a chemical change of the blood, which is extremely probable, though it has

not yet been proved to exist; and thirdly, to a predisposition of the fibrous structure of the heart to rheumatic action; in common with fibrous structure in other parts.

The phenomena of Endocarditis cannot be correctly accounted for, unless we admit the two first positions; excess of fibrine alone might reasonably be supposed to excite the Endocardium sufficiently to cause Endocarditis; but in practice we find that this excess usually produces all the signs of an obstructed circulation; as we see in the second stage of this disorder, and also when polypi are formed in the heart, or when layers of fibrine are laid down upon the interior of an aneurismal sac. Instead of exciting the heart to increased action, a diminution of action results; but if to this thickened state of the blood there be added a chemical change; both the inflammation of the serous membrane, and the heart's tumultuous action, will be satisfactorily accounted for—since every one must admit that such a combination must prove powerfully excitant of morbid action.

This disease generally co-exists with Pericarditis; yet it often exists alone; and according to Bouillaud, about half of the cases are complicated with Pericarditis; the other half consisting of Endocarditis uncomplicated. It thus forms a starting point for the various heart-lesions, which ultimately prove fatal to life.

SIGNS AND DIAGNOSIS.

This disease may be divided into two stages or periods. The general signs of the first are Pyrexia, more or less inflammatory; which is diminished or

suspended when there is great embarrassment to the circulation through the heart from the fibrine in excess—then there is great difficulty of breathing.

Pain.—This is slight, or rather it is an uneasiness about the præcordia; and this depends probably on the thickened state of the blood—giving rise to an expression of great distress in the countenance.

Pulse.—This varies with the pathological state; and may be full, strong, and hard, or almost the reverse. Its frequency has been stated at from 80 to 110; but I have always felt it to be more frequent than this, and seldom under 120; though the radial artery varies as to fullness of the artery.

The respiration is accelerated; but if the patient remain quiet, and the circulation remain moderately unimpeded by the fibrine, there is but little oppression.

The face and skin retain their colour, in this stage of Endocarditis; and the mind retains its faculties in consequence of the blood being still sufficiently aerated.

The second, or fatal stage, is known by all the ordinary signs of impeded circulation through the heart; and they proceed from the increasing thickness, or from the coagulation of the blood in the cardiac cavities, whereby the action of the valves of other portions of the heart are more and more impeded. These symptoms have been ascribed to thickening of the valves from inflammation; but one must doubt whether thickened valves can give rise to such symptoms as those alluded to. The same symptoms are produced by paralysis of the heart from poisons; as Dr. Hope has pointed out.

The action of the heart becomes quick, irregular,

unequal, intermittent; and there are some pulsations in the heart which are not transmitted to the radial artery.

The pulse is small, weak, irregular, intermittent, while the heart's impulse may be violent. The pulse will be jerking if there is aortic regurgitation.

There will be paleness of the surface; faintness and syncope; great anxiety; orthopnoea; and want of sleep. The retarded venous circulation causes a lividity of the surface; and dropsical puffiness soon shows itself.

Venous blood circulates through the brain, and the mind wanders; convulsions, with stertorous breathing soon closes the scene.

Dr. Hope tells us that weakness, irregularity, and intermission of the beats of the heart, with orthopnoea, anxiety, and distress, may exist temporarily and in a moderate degree, without the existence of the mechanical impediments to the cardiac circulation, which causes the above described symptoms, but merely from a disturbed state of the nervous system:—I have never met with such cases.

Physical Signs.—On percussion, dulness over a very large surface—of from four to sixteen square inches, according to some statements, though I have never met so extended a dulness as the last named. The increased dulness will of course depend on the pathological state; and will be slight or even absent, as the heart circulation is more or less free. This dulness is distinguished from the dulness caused by fluid in the Pericardium, by the impulse sensibly striking the walls of the chest; and by its being synchronous with the first sound; whereas the impulse,

when Hydropericardium exists, is not synchronous with the first sound; it is undulatory and indistinct; while it also mounts high up the sternum. The impulse is abrupt and violent though regular, in the first period; in the second it becomes weak, irregular, at first violent, then feeble. There is a tremor about the fourth or fifth left intercostal spaces, when there is regurgitation through the mitral valve; and which regurgitation is probably caused by some fibrinous concretion, mechanically preventing this valve from closing properly. This tremor appears to me always present when there are polypi, or fibrinous concretions in the cardiac cavities,—I could almost consider it diagnostic.

Murmurs.—These are always heard over the left cardiac region—for there, the disease is going on. A bellows-murmur is heard with the first sound; and in some cases there may be a double bellows-murmur. These may be heard in the first stage; but in the last, as concretions or polypi increase, and almost choke up the passage through the heart, they will diminish or wholly cease. The causes of these murmurs are not far to seek. In the first stage, the single murmur may arise from inordinate action and expansion of the left ventricle, destroying the proportion which exists in nature between each cardiac cavity and its outlet; and the double murmur will result from the ventricular valves, being mechanically kept open, either by the fibrine, or else from inflammation having caused constriction of the valves.

These murmurs may be mistaken for the attrition murmurs of Pericarditis; but they may without diffi-

culty be distinguished, and a little attention will suffice.—See PERICARDITIS, DIAGNOSIS.

We must not forget too, that a double *bruit de soufflet* may be produced by excessive depletion; and thus we may fancy we have a case of Endocarditis before us, which is the result of excessive venesection; and the treatment of which is diametrically opposed to that of Endocarditis. This would be a fatal mistake. It is now supposed that several of Bouillaud's alleged cures of Endocarditis, arising from, or occurring during Rheumatism, were of this nature; and were the results of his *coup sur coup* blood-lettings. I met with a case corroborative of the probability, that such murmurs may be produced by excessive depletion. Excessive depletion induces too thin a state of the blood, by abstracting its fibrine; now a similar state of blood, as to thinness, exists in Purpura; and the case of Charles D. (See Chapter on HYPERTROPHY), was a case of Purpura with Hypertrophy and Dilatation of the left ventricle:—a double bellows-murmur was heard, and it was mistaken for Endocarditis by an acute auscultator.

When valvular disease follows, it will be known by the valvular murmurs persisting after the inflammatory signs have subsided; also by palpitation and dyspnœa on exertion. If there happen to be regurgitation through the aortic valves, the pulse will be so jerking as to simulate the hard pulse of inflammation. This would be a mistake of practical importance.

The diagnosis may be summarily comprised in a sudden onset, most frequently during an attack of rheumatism;—of fever;—of violent action of the heart;—and of certain murmurs.

PROGNOSIS.

The prevention of this disease during a Rheumatic seizure, may surely be counted on, if proper treatment be adopted; neither is the disease when formed, at all rebellious to judicious treatment; but if time is allowed for the disease to progress into the second stage, it is most likely that no treatment will avail. The prognosis of its consequences—Hypertrophy or Valvular disease—will be seen under their respective heads. Recovery will follow if we are in time to prevent fibrinous deposits, from being formed on the serous membrane of the valves and other parts, and thus originating structural lesion.

Endocarditis has been divided into three stages—the first, extending from the first to the fifteenth day—the second, from the fifteenth to the thirtieth day—the third, from the thirtieth day onwards.

This division appears to me, not to be warranted in practice, and to smack more of the closet than of the bed-side—nor do I recognise a chronic Endocarditis; but I would divide the disease into its two stages as described in the diagnosis; and into its consequences or results. The most practical view of the progress of this disease is that of Dr. Hope's—who says, that this "disease may be divested of all danger to life in from three to seven days; but if the murmur persists beyond a week or ten days, it may become permanent, and there is a risk of Valvular disease being established." The disease may be called chronic Endocarditis, and an antiphlogistic treatment may be useful for some time after a week; but I should think that after the second week at

furthest we have to do, rather with the results of the inflammation, than with the inflammation itself.

The causes are the same as those of Pericarditis; with the addition of Phlebitis, which has extended to the heart.

TREATMENT.

This form of heart-disease is highly dangerous to life, both in its acute stage and in its results, and complete recovery becomes essential; for if Valvular disease is permitted to establish itself, the patient is thenceforth doomed to a curtailed life of precaution, if not of considerable suffering.

Through this disease, Rheumatism becomes the source of much misery and of increased mortality; and it is now agreed that the worst forms of Valvular disease originate more frequently in Rheumatism, than from all other causes put together. Fortunately Endocarditis may be deprived of all danger within a week, by proper treatment.

The treatment usually recommended is that of Pericarditis—and if by that, be meant Pericarditis complicated with Endocarditis, our practice will be correct: and in the great majority of cases, such a complication will occur; but the treatment of uncombined Pericarditis differs from that suitable to Endocarditis, as it will admit of more energetic depletion than will Endocarditis. In the latter syncope might be fatal; and we therefore must use the lancet very cautiously; while in Pericarditis we may bleed with much boldness. Again, nausea unto faintness will prove beneficial in the latter; but in the former, where the fibrine renders the

current of blood through the heart very sluggish, faintness from languor may favour deposition of fibrinous concretions; and the patient may thus be precipitated into the second stage of fatal obstruction, which has been described.

Perhaps the observation may be permitted, that the junior practitioner's attention has not been sufficiently directed by authors, to the frequent co-existence of Pericarditis and Endocarditis—and not at all to its practical bearing on treatment. Therefore if only attrition-murmurs attend Pericarditis in its early stage, and there is no bellows-murmur, (which would be caused by Endocarditis,) we may proceed vigorously; and do all we can to extinguish the inflammation as soon as possible. In Endocarditis uncombined, we must be guided as to venesection partly by the general symptoms, though not altogether; for the disorder may be attended with very mild symptoms so long as the circulation through the heart continue unimpeded; yet the danger of Valvular disease is as great almost in these seemingly mild cases, as in others apparently more violent.

One or two blood-lettings then; but avoiding the slightest approach to syncope may be ordered—then local detractions of blood will be preferable—and cupping and leeching may be prescribed, according as circumstances seem to require.

A good cupper will succeed in taking away a very considerable quantity of blood, if desirable; and thus produce considerable effect on the circulation, with less risk of syncope.

Our next remedy is Mercury; and, with me, it has proved indeed a sheet anchor; amelioration follows

a commencing tenderness of the gums ; and I then stop. That mercurials tend to thin the blood is now an opinion pretty generally received.

Of the sedatives, I give Aconite, for reasons already detailed ; and it may be combined with the mercury or with the liquid medicines.

Digitalis I never would again order in this disease. Its influence is to enfeeble the action of the heart and retard the circulation of the blood ; consequently, it will promote the stagnation of the blood—the very thing it is our object, in this disease, to avoid. It has been banished by good practitioners from all diseases of the heart attended with debility of the organ ; on account of the danger of polypous formations ; and although, in Endocarditis, there is no positive debility of the cardiac muscular fibres ; there is, after a few days, a relative labouring and inability of the heart to propel the thickened blood through the heart. The tumultuous action of the heart in Endocarditis, leads immediately to an employment of Digitalis ; but my professional brethren will find aconite infinitely preferable, and the hydrocyanic acid also superior, in this case, to the foxglove. Dr. Munk has lately published the results of his experience of foxglove, as a sedative ; and with a view to prevent its poisonous influence, he discontinues it in a week, if decided benefit have not ensued—either from its sedative or diuretic influence. His excellent directions will not apply to the present cases, for no time is to be lost, and recovery or death may be said to be decided in the four first days.

Alkalies may be considered as almost specifics in this disease ; and seem to reduce the abnormal thick-

ness of the blood, very speedily and very effectually. By the combined action of mercurials, aconite, and alkalies, it appears to me that the slaughtering depletions which have been recommended, may be dispensed with; and dilatation of the heart, general exhaustion, tubercular consumption, &c., may be avoided. I have ordered the *Liquor Potassæ* in preference, whenever I could use it, as it appears to be a more powerful agent in thinning the blood than the alkaline carbonates—but when I have wanted to combine some neutral aperient salt, then I have used the latter.

Counter-irritants are useful, at various periods of the treatment, but more particularly when the disorder assumes a chronic character.

The diet will be in accordance with the varying indications or periods of the affection, antiphlogistic, at first—then mild and nutritious.

The most complete repose is necessary during the early stage.

CASE VII.

Sarah M——, ætat. 24, married three years ago; no children; is a charwoman; was seized with Rheumatic fever about three weeks ago, while washing; all her extremities were quite motionless, and paralyzed by rheumatic action—can now move the left arm. On the 7th Jan., 1841, she was brought to the infirmary in a litter, perfectly helpless—tongue white; great thirst; urine red, with red sediment; and pyrexia. At first the rheumatism was not very violent—then fever ensued—and within the last three or four days, (she is not certain as to the exact day,) she was seized with the following chest-symptoms—great dyspnœa; palpitation; some pain to the left of the sternum, between it and the left nipple; pulse 110, and small; the heart beats in a confused

and tumultuous manner over a large abnormal space; a double bellows-murmur, but loudest with the first sound; a strong purring tremor to the left of the sternum, felt by the hand; no pain on pressing between the left intercostal spaces; countenance haggard and anxious; menstruation had been regular; bowels confined; can only speak in a whisper. I had no doubt of this being a case of Endocarditis, in a weakly habit—Haust. Cathartic statim. R. Potass. Carbonat. ℥j., Sodæ Carbonat. ℥j., Sodæ Sulphat. ʒss. Vin. Colchic. m. xx. Aquæ ʒj., 4 ter in die. R. Chlorid. Hydrarg. gr. 24, Extr. Aconit. gr. iij. Misce quam optime et adde Pil. Sapon. Comp. ℥j. ut fiant pilul. 12, Capt. j. nocte maneque quotidie.

Jan. 10. Gums beginning to be tender; heart's action more normal; purring tremor gone; urine lighter coloured, and with less sediment; legs stiff, painful, and swelled; diarrhœa. Omitte pilul.—R. Sodæ Bicarb. ʒji., Solut. Sodæ Citrat. ʒj. R. Opii. m. x. ter quotidie. R. Iodin. ope penicil. crurib. nocte quotidie.—Jan. 12. Improving; still some pain about the mamma. On the 17th was able to leave her bed, and began to speak strongly, while the face showed a freer circulation through the heart. On the 23rd she caught cold and cough; quick pulse; flushed face ensued, but the cardiac phenomena remained subdued, showing that a specific action and state of the blood was necessary to excite the cardiac cavities. On the 4th Feb. she could dress herself, walk about, &c.; and on the 4th March she was discharged quite well.

I am of opinion, the purring tremor in this case was caused by fibrinous concretions, or by great thickness of the blood; and that the alkalies and mercury removed them.

It is not difficult to conceive how extreme thickness of the blood can excite a tumultuous action of the heart; and if to thickness be added a chemical change, one can imagine the probability of very great disturbance arising.

CASE VIII.

On June 13, 1839, Anne N——, ætat. 24, was admitted, unmarried, and menstruation hitherto regular—been ill four months. At first her legs and bones ached, then sickness, pain, and tightness in epigastrio, with dyspnœa. Caught cold, her pains became

worse, and she was seized with the following symptoms five days ago—great anxiety in face; cardiac countenance; great dyspnoea, and a full inspiration causes uneasiness in epigastrio; hypertrophic impulse, with strong diffused bellows-murmur at first sound, over the site of the first ventricle; pulse 130; the slightest exertion adds greatly to her distress; some hoarseness; a little cough, but no sputa—Pyrexia. There seemed little doubt of this case being one of Endocarditis, supervening on some previous existing disorder of the heart. V.S. R. Submur. Hydr. gr. ij., Extr. Aconiti gr. j., nocte maneque quotidie. R. Infus. Digital. ℥j., Sodæ Bicarb. ʒss., Acid. Hydrocyanic. Medicin. m. ij., 4th horis. June 16. Heart signs better; impulse diminished; urine increased; bowels open; occasionally giddy; pulse 108. Repet medicam.—June 21. She was this day ausculted by an intelligent medical gentleman, then living at Hoddesdon, who could not detect any undue impulse. Gums tender. Omitte calomel. Some Colchicum was now ordered for the rheumatic pains, which were worrying her. On July 25 she was discharged in good health, though there was some murmur with the first sound, and the left ventricle appeared to me to be too large.

The thoracic phenomena had been of some continuance; nor could she tell the exact period of their first appearance. The endocarditic state had fortunately been of short duration; and it was completely subdued. The remaining bellows-murmur may be caused by slight Hypertrophy of the left ventricle, or from the normal proportion between it and its outlet having been destroyed. I cautioned her as to her conduct after she left our infirmary. In this case, the heart's action was so very tumultuous, that I was alarmed, and resorted to a combination of sedatives, and amongst them digitalis. The hypertrophic action of the ventricle took away all fear of polypi being formed during its administration. In a similar case, I should rely on the aconite with a mercurial.

Such has been the practice with me, in Endocarditis—blood-letting having been ordered more or less freely according to circumstances; but I have never relied on reducing the excessive fibrine by blood-letting, which mainly acts by directly taking

away the fibrine, and the fibrine being replaced by a diluted, and consequently less stimulating serum. But is it not better to alter the constitution of the blood if we can, than to take such large quantities away? at times too, when the patients are too weak to spare any such loss with safety. Neither must we forget that there is a danger of a fatal syncope; to which such patients have been already stated to be prone.

The *Liquor Potassæ* is a powerful remedy for reducing the quantity of the fibrine, and forms a good combination with *Colchicum* in rheumatic cases.

I have treated eight cases of Endocarditis and all have recovered, under treatment nearly such as I have described; but I cannot say the same of cases of co-existent Endocarditis and Pericarditis. The treatment of such cases must require great judgment; for the vigorous measures adapted to uncomplicated Pericarditis might give rise to a fatal result through syncope, or by hurrying on the second stage of obstructed circulation from fibrinous concretion or polypi. Fortunately we have calomel, aconite, and the alkalis, to resort to, and thus we need not bleed so much as otherwise we shall be forced to do. Our prognosis should be very guarded, even when we are called in early. All the cases of combined Endocarditis and Pericarditis which I have had to treat, and some of which are related in the chapter on Pericarditis, have proved fatal; but in all, much valuable time had been lost. The treatment for such varying cases cannot well be laid down; but must be left as to details, as to the greater or less detractions of blood &c., to the discretion and experience

of the practitioner, and again I will repeat my warning, for him to recollect before he dashes at a cure, lancet in hand, that to see his patient after a copious venesection, suddenly plunged into the second stage of Endocarditis, or into a fatal syncope, would be most distressing to his feelings, and well nigh fatal to his professional character.

CHAPTER V.

HYPERTROPHY.

HYPERTROPHY of the heart consists, functionally of increased action, and anatomically of augmentation of muscular fibres. It is divided into : firstly, simple Hypertrophy, in which the walls are thickened, the cavity retaining its natural dimensions ; secondly, Hypertrophy with dilatation, which is subdivided into cases where the walls are thickened and cavity dilated, and where the walls are of natural thickness and cavity dilated ; thirdly, Hypertrophy, with contraction or concentric Hypertrophy, in which the walls are thickened and cavity contracted. It is said, that “ the walls of the left ventricle ought to have a thickness a little more than double that of the right ventricle ; they ought not to collapse after an incision has been made into their cavity. The right ventricle is a little larger than the left, and having larger columnæ carneæ—notwithstanding the inferior thickness of its walls—it ought to collapse after an incision has been made into it. The four cavities of the healthy human heart are nearly equal to each other ; but the auricles form scarcely a third of the total volume of the organ.” These cavities

contain usually about eleven or twelve drachms of fluid. These proportions differ according to age and other circumstances. The natural thickness of the walls of the left ventricle, averages about half an inch in the adult; and it is said, it seldom exceeds one inch and a half in disease; but, in one case, I found these walls two inches and a half in thickness, but it was an extreme case.

The causes of Hypertrophy are: the moral affections in inordinate action exciting palpitation; fevers of a certain kind producing a morbid state of the blood;—as Rheumatic fever, or that attending some of the Exanthemata, especially Scarlatina and Rubeola Pertussis. All causes which will accelerate or obstruct the circulation of the blood, and cause pressure upon the heart, viz., violent and protracted corporeal efforts in plethoric habits, such as rowing, cricketing, &c., every thing that occasions mechanical obstacles to the course of the blood; effused fluid in, or adhesion of, the pericardium; diseases of the cardiac valves; smallness or dilatation of the aorta; all affections of the chest which obstruct the pulmonary circulation; narrowness of chest, pressure of the abdomen on the diaphragm.

All obstacles to the circulation act in a retrograde direction, as once before has been mentioned; therefore the cavity situated immediately behind the obstruction is the first to feel its influence; thus an impediment in the aorta, or aortic valves, acts upon the left ventricle first—obstruction of the mitral valve acts upon the left auricle, and so on.

SYMPTOMS.

Hypertrophy of the left ventricle is most frequently met with, and is easily recognised by a strong upheaving, slowly rising impulse, which, when once heard, is little likely to be afterwards mistaken; and which is best heard by the stethoscope placed on the left cardiac region, between the cartilages of the fifth and sixth left ribs. The head and ear of the auscultator seem to be lifted up with each action of the heart; there is, a prolonged first sound—and on percussion, there may be some dulness; there is usually more or less of bellows-murmur, because the natural proportion between the cavity and its outlet have been destroyed.

The general signs are: palpitations, which are more unintermitting, and more easily excited in this than in any other form of heart-disorder; for Hypertrophy itself borders on palpitation; the pulse is full, strong, and often vibrating under the finger, like a vibrating hard cord. The face, eyes, and skin, are highly injected, and the skin, at intervals, is covered with profuse perspiration, as if nature tried in that way to lighten the heart's load; there is little dyspnœa, if the patient do not exert himself—little cough, or none, unless serous infiltration have taken place in the lungs; hæmoptysis is not unfrequent, and arterial blood may be thrown up; the head suffers often, and vertigo, headach, &c., may attend, and even apoplexy result. The kidneys, too, are in great danger, for the large size of the renal arteries, and the quantity of blood they carry, allow of transmis-

sion of the abnormal impulse from the heart; hence a pain in the loins and back is not uncommon.

Serous and dropsical infiltrations are the last symptoms—in the form of tense, inflammatory anasarca, œdema pulmonum—they are the precursors of death, though they may have been removed by treatment two or three times even; before which fatal event, the florid red of the countenance turns to a purplish livid colour, and the capillary circulation becomes more and more embarrassed; violet, livid patches appear on the cheeks, nose, and lips.

In Hypertrophy of the right ventricle, the local signs are to be sought for under the lower third of the sternum, and there is greater, earlier, dyspnœa, with a deeper colour in the face—there may also be observable a fulness, or pulsation, even of the jugular veins.

In Hypertrophy, as we shall see hereafter in Dilatation, we must be very cautious ere we decide on the disease being organic, and on there being permanent change of structure—for in spite of our improved means of diagnosis, and of measurement by percussion and the stethoscope, we may not unfrequently be deceived on this point, and find the symptoms give way unexpectedly to treatment. This is the more likely to happen, as we have no opportunity of watching the permanence of the physical signs, in the visits of our patients to us; and also, as the mere visit itself will cause a temporary exacerbation of the symptoms.

Hypertrophy has been considered as the effect of inflammatory action; but I cannot concur in this view, for the symptoms are not those of inflammatory

action, but only of increased action and power of the ventricle itself. In such cases we may not have a single symptom of pyrexia. I agree with Dr. A. Thompson, that Hypertrophy is the result of increased nutrition, and I moreover think that, irritation caused by some modification of the blood, is the proximate cause. "In inflammation, the albumen and fibrine of the blood are deposited in the interstitial tissue, but without being assimilated, or sharing in, the vital energy of the organ." We see no evidence of this in our necroscopies of Cardiac Hypertrophy. Corvisart, Dupuytren, Marandel, and Cruvielhier, thought that there might be a morbid action at work;—an irritation, from or under the influence of which Hypertrophy might arise. Dupuytren designated this action, nutritive irritation; and although the term is hypothetical, it may be received as marking out an action very different from that of inflammation. The direct causes assigned by Corvisart are, fatiguing exertions; certain professions requiring great intellectual efforts; certain moral affections—too stimulant a mode of living; but wherever Rheumatism, Scarlatina, or Measles have preceded, I should look for an adequate cause in the state of the blood peculiar or consequent to those diseases. This blood would prove a source of constant excitement to the muscular fibres, and soon lead to Hypertrophy—and we accordingly, in most cases, shall be able to trace a rheumatic origin, at one time or another, before the Hypertrophy had attracted any attention.

The prognosis of this affection commonly given is, that it is incurable, and that the ventricular parietes

cannot be brought back to their normal state. But there are two chief kinds of Hypertrophy—the one, a simple affection without any morbid productions, and with but little augmentation of tissue; the other is caused by some mechanical obstacle in the course of the circulation. Now, provided the sufferer is obedient to his doctor, and is in circumstances to abstain from exertion, I see no reason why the first kind should not be removed altogether if recent, and if of some standing checked or stopped in its progress; and the heart's action reduced within the bounds of safety, so as even to allow of long life. The prognosis of the other kind must depend on the nature of the mechanical obstacle;—whether removable or not;—whether of rapid or of slow progress.

TREATMENT.

Our indications of treatment are twofold—one to reduce the irritability and abnormally great action of the muscular fibre itself. The other, to diminish the quantity of fluid in the ventricle, until there is as little fluid remaining in it as may consist with a due performance of its vital functions. Dr. Thompson very truly says, “The growth of an organ is affected by an afflux of blood to it, as well as by the attraction or assimilation of the fluid parts of the blood, &c.; when the organ is a moving or moveable one this process is favoured by motion or exercise determining a greater supply of blood to the part.” A reduction of the mass of circulating fluid is im-

portant; for as the quantity lessens so will the ventricular parietes adapt themselves to their contents.

If rheumatic action have been the cause or concomitant of the Hypertrophy, we can easily imagine, as before said, how irritating the blood must be to the cardiac muscular fibres; and how excited action is set up more and more in them, until they increase in size and power; lesion of structure ensues, and the excited action becomes perpetuated by the augmented substance and strength of the muscle, till a plethoric congestion becomes almost universal. In one case which I attended, the action of the heart was truly alarming to behold, as were also the paroxysms of palpitation and dyspnœa; and a tense shivering anasarca proclaimed the extent to which the constitution was suffering; yet in even so extreme a case, great relief was afforded. The treatment is obvious;—to bleed frequently, though not too largely at a time, till the blood is reduced in quantity;—then as we have a specific irritation going on, alkalies with digitalis, or colchicum, or aconite must be given. Most practitioners are aware of Laennec's directions as to bleeding in Hypertrophy: that we are to bleed most copiously, and at short intervals, till the impulse be reduced and palpitations quieted; but such a plan has not been found to answer. The patients have been thrown into great irritability, which has increased the palpitations; and into an anæmic state, which has caused dropsy to be added to their other miseries.

We should diminish the quantity without deteriorating the quality of the blood; by small blood-lettings,

four or six ounces every three or four or six weeks; and thus we should avoid both reaction and anæmia. I am alluding now to the early stage, in which it is our object to secure the brains, lungs, or kidneys, from the effects of the too powerful action of the heart. When after V.S. irritability and palpitation increase instead of diminishing, we should stop: and if we have gone so far as to cause pallid face, quick jerking pulse, and other marks of anæmia, then we may even have to give tonics, chalybeates, and sedatives.

If the head be threatened, cupping to nape of neck; revulsive purgatives may be given, with calomel as an alterative after the depletion. By employing the sedatives hereafter mentioned, much less blood need be abstracted.

The blood may be rendered less stimulating by saline purgatives, and these must be given every alternate day, so as to procure watery motions, and they may be continued almost throughout the treatment; only at later periods, we may have to add a tonic vehicle to counteract any debilitating effects.

The diet is material, for by it we may prevent in a measure a plethoric state of the blood; animal food must be avoided at first, and only a farinaceous, or fish diet at most, can be allowed. After some time, or in weakly habits, we may order some animal food, but cautiously—the stomach should never be loaded.

One great point is abstaining from much drink; and as dry a diet must be followed as the patient can bear. No rule can be laid down as to quantity,

it must vary with circumstances. Stimuli are to be prohibited, or in habitual free livers, as little allowed as possible. Soda or Seltzer water may be taken; but the less of any drink the better. Gentle, very gentle exercise should be recommended, after the circulation has been put into a safe state, and the violence of symptoms reduced.

If dropsy follow this kind of Hypertrophy, we must treat by cathartics, diuretics, &c., for which see Dropsy, Valvular Disease.

These measures must be persevered in, for even years, if necessary, and the plan of treatment steadily pursued. Dr. Hope tells us, a cure mostly takes place in one or two years; but even then precautionary treatment should be pursued for a subsequent year or two. If the disease have not progressed too far, recovery may be expected in most cases.

If the Hypertrophy be of the second kind, we must take great care not to bleed too much, nor to reduce the general strength nor the power of the organ itself too much—for the Hypertrophy is an effort of nature to overcome the resistance of the mechanical obstacle. It has been justly argued, that “in the case of obstructed aortic orifice and consequent Hypertrophy, if we bleed and reduce cautiously the quantity of the circulative fluid, relief will be afforded to the suffering occasioned by the impeded circulation; but it should be remembered that the Hypertrophy is an effort of nature (as I have above said) to propel the blood with greater force through the narrowed orifice, and that any thing which materially diminishes the power of the

ventricle would render it incapable of contending against the extra labour to which it is subjected. In permanent patency of the aortic opening, allowing of regurgitation, great increased labour falls on the ventricle, and the best results we can look for is Hypertrophy, as being the only means of carrying on the circulation."

It is evident that the utmost practical tact and watchful care are requisite in the treatment of such cases. To fulfill the first indication we shall find the aconite a very powerful remedy; and after sufficient detraction of blood, general or local, I would rely almost solely upon it, unless in some cases where the diuretic influence of the digitalis is necessary. It will save the extraction of many ounces of blood, and we thus avoid the distressing irritability and morbid sensitiveness which invariably follows much blood-letting.

The palpitations and dyspnœa have generally led the medical practitioner to too free a use of the lancet; for Dr. Hope says of Hypertrophy that if we resort to bleedings at short intervals, on account of the palpitations, the disease will only the more quickly hurry on to a fatal termination. Yet he does not suggest any mode of avoiding such blood-lettings under the circumstances mentioned. The aconite is here preferable to belladonna or to any other sedative, on account of its power in removing an inflammatory tendency which often exists, and occasionally during its progress arises in Cardiac Hypertrophy. To relieve the capillary congestions which attend on this disease, we must recollect that there are two chief kinds of congestion

—the first, arising from a rapid filling unto distension of the capillaries of a part by the vasa afferentia, while the vasa efferentia are only in their normal activity, and therefore unable to remove the unusual burden laid upon them. The other kind arises from an impeded action of the veins of a part, while the vasa afferentia are only acting with their ordinary power. The mode of treating these two kinds of congestion are widely different—in the first, the vis a tergo must be diminished by detraction of blood, an antiphlogistic course, &c.; in the second, the vis a tergo requires to be increased by tonics, and the impediment removed from the veins, if possible. Now the congestion in Cardiac Hypertrophy is of the first kind; and if by art we do not lessen the distension, hæmorrhages take place, from the mucous membrane of the lungs or bowels, or into the head—or serous effusions into cavities or cellular membrane. These hæmorrhages are very dangerous; for when they take place in the head, we have an *apoplexie foudroyante*; when in the chest, we have violent hæmoptysis.

We may, by a combination of sedatives, act very powerfully on the heart if we choose; but if the aconite be good, it will alone prove sufficient, I feel confident. To effect the second indication, Dr. A. Thompson recommends elaterium and calomel, for he says the former diminishes the serum of the blood and not the fibrine nor red particles;—thus the vital powers are not broken down. I have tried this plan, and find it valuable in some cases; but very objectionable in others, on account of the nausea and vomiting and irritability of the bowels

caused by the elaterium being too distressing to bear; while the action of vomiting causes a strain upon the parts, and an excitement of the circulation. The calomel too, soon causes ptyalism; and the sore mouth is often troublesome, causing irritability and depression, and preventing the eating of food. Where a rapid effect is necessary to lessen the dropsy, I have given elaterium very early in the morning, so as to allow time for the stomach to recover during the day. In other cases, I find Magnes. Sulphas, and Jalap, to be sufficiently hydragogue; protecting from vomiting by Hydrocyanic Acid or Creosote, &c. The other means of treating this form of Hypertrophy, are comprehended in the observations made on the treatment of the first kind; only here we must not reduce the strength, so much as we are obliged to do in the first kind. The sedatives are here more useful; and the urgent symptoms are to be obviated by diminishing the fullness of the vessels through purgatives, diuretics, diaphoretics, &c., rather than by V.S.

The liver should be kept as empty as possible, by an occasional mercurial purge, followed by sulphas Magnesiae.

The diet may be a little more generous; but we must feel our way in this respect.

It must not be forgotten that the Hypertrophy is itself but an effect of some mechanical obstruction; which obstruction cannot be removed probably;—we can only palliate; but yet palliation and precaution may do a great deal.—For in these times, when auscultation can make us acquainted with the slighter and incipient degrees of Hypertrophy—we can almost

confidently promise a recovery from incipient and functional Hypertrophy of the first kind; and a considerable prolongation of life in the second.

The following illustrative cases are some of them examples of functional Hypertrophy, as well as organic.

CASE IX.

Mr. T. S., ætat. 20, came to me in June, 1832,—a journeyman butcher; often tramping about in the wet and in an atmosphere of steam. He had caught cold several months ago;—had pains in his joints, then Rheumatic fever; after a few days, a pain came on in his left side, darting to the shoulders, yet fixed near the left nipple. His present state: Dyspnœa, increased by the slightest exertion; a bellows-murmur with the first sound, and a heaving impulse with the systole-sound up to the third rib; pulse full and rather vibratory; eyelids puffy; face injected; ancles hard and swelled; urine red, and sedimentous. It seemed as if treatment would not be very efficacious here.

I ordered V.S., Calomel, Digitalis, Pil. Scill. C. and Opium—an alkaline Aperient mixture with Hydrocyanic Acid. This treatment was continued, and six ounces of blood taken every ten days or so, with slight variations, according to circumstances, for fifteen weeks, when he was discharged, and went to his work in a tolerably comfortable state; but cautioned what to avoid. He has been at work, and under my eyes, ever since. I used very often to meet him.

On the 4th of October, 1841, nine years after his treatment by me, I examined his chest; he had had no recurrence of the hypertrophic attack; the heart's action is normal, though, perhaps, a little enlarged; he is reminded by palpitation, when he exerts himself too much, that he must be careful, otherwise he feels quite well, and always best when he takes least fluid. I warned him again, and as he is now a master instead of being a journeyman, he may take care, if he likes, and may enjoy length of life. My remark on this case, recorded at the time, was, that it was a very encouraging one.

CASE X.

S. S——, ætat. 21—June 29, 1843—had suffered from Rheumatism some time back; strength reduced; pains in his knees, and his legs were much swelled; some cough, and frothy sputa; the usual signs of hypertrophic impulse of the left ventricle; pulse 116—orthopnoea. R. Calomel $\mathfrak{z}$ j. Pil. Scillæ C. and Pil. Sapon. C. $\mathfrak{z}$ j. of each—f. pil. 12, one every night. A mixture of Vin. Colchic. and Liquor Potass. m. xx, each. Infus. Sennæ $\mathfrak{z}$ ss. R. Digital. m. x. ter die. July 2. Legs of normal size; sputa diminished; but impulse continues. July 4. Add gr. ss. of Extract Aconit. to each dose of the mixture. July 9. Heart's action and impulse reduced; pulse 86. This treatment was continued to August 3, when he was discharged quite well—the heart's action normal. He went to his work.

This attack seems to have been combated in time, and the case shows what sufficiently early treatment may effect. I think, too, it shows the sedative action of the Aconite.

CASE XI.

On the 3rd of June, 1835, I was requested to visit Mr. B., ætat. 56, who had been ill, with his present symptoms, for a considerable time, nearly two years; of full habit of body; retired from business. The disease was active Hypertrophy of the heart, in an extreme degree. The morbid beating of the heart could be seen, and the blowing sound heard, at a great distance; the ribs and whole anterior chest bulging out; the sounds of the heart's action could be heard at the top of sternum in the back, and to the right of the sternum. The pulse full and hard, so as to resemble some strong cord; the face highly injected, and also the skin generally, with copious perspirations; dyspnoea on the slightest exertion; pain in head at times, with giddiness on stooping; also occasionally a lumbar pain, with urine scanty, and charged with the lithates. This man was fond of good living. By free and repeated venesections; by Digitalis and Colchicum, and Hydrocyanic Acid in infusion of Senna, with Calomel and Colocynth at bed-time, two or three times a week, the patient became much more comfortable;

the urinary and alvine excretions were both much increased; the sedative influence of his mixture was striking. My injunctions as to scanty diet now began to be disregarded; and, although the secretions were free, he became again very ill. Again V.S. several times, with buffy blood. He rallied from this attack, though he was left weaker, and the morbid size of the heart remained undiminished. I told both the patient and his wife, that without dieting properly, I could expect to do no good whatever; when they removed to London, in some displeasure with me, and I have no doubt death soon released the sufferer.

This was a case of Hypertrophy in a sthenic habit; the next is one of Hypertrophy in a nervous habit that would not bear active venesection, &c.

CASE XII.

HYPERTROPHY OF LEFT VENTRICLE IN GOUTY HABIT WITH HEPATIC DISORDER.—Mr. N., about 50, of weakly habit and nervously apprehensive. 21st of July, 1838. His father was highly gouty, and so is his brother; he himself had, about the 8th of May, some swelling and heat in the right great toe, with some signs of what he considered was a bilious state, *i. e.* nausea; but as he had been on board a steamer, and also had a bunyan, he thought the sea-sickness had caused the nausea, and the bunyan the swelling. His medical attendant ordered leeches; their bites bled freely, with relief to the foot; but the following thoracic phenomena set in, and have continued with increase ever since:—a sense of tightness and constriction over the præcordia; heart's impulse very great; dull blowing sound; the right ventricle pushed to right side of sternum; face and capillaries injected; occasional violent palpitation, then pain near the nipple; heart's action heard up at top of sternum—most violent at cartilages of fifth and sixth ribs and at mid-sternum; pulse full, hard, and 120; dyspeptic symptoms; urine red, with sediment, but of normal quantity; has been losing flesh, and is much alarmed; some uneasiness on pressing the hepatic region. R. Pil. Hydr. Extr. Col. C. āā. 3ss. Extr. Hydr. ℥j. ft. pil. xvj—ij. on. I did not bleed, but tried the effect of Aconite to reduce the impulse. Empl. Canthar. epigastr., and Pulv. Fol. Digit. gr. vj. sprinkled over the blistered surface. R. Sodæ Bicarbon. 3vss. Sodæ Sulphat 3iss. Extr. Aconit. gr. ij. Aq. Menth. Sat. 3viij. Cochl. largum ter die.

The notes of August 2nd, are—he soon felt relief; heart's impulse diminished; pulse not so frequent (100), nor thumping; perspires often, yet feet occasionally cold. He now had pills of Calomel, Extr. Hydr. and Extr. Belladon. gr. one-eighth, and a pediluvium medicated with Iodine. R. Iodin. $\mathfrak{z}$ iiss. Hydriod. Potas. $\mathfrak{3}$ v. Spir. Vin. $\mathfrak{z}$ ss. Aquæ Dist. $\mathfrak{z}$ viiss. Cochl. ij. larga ad cong. iv. Aq. Tepid pro pediluvio.

This pediluvium acts as a powerful stimulus to the capillaries of the feet, and will often much relieve the thoracic congestion; but here the gouty habit called for it especially. August 16th. Heart's action very nearly normal, but still a slight blowing; pulse 78; complains of a little tightness about the præcordia about twice a week, then the clothes feel tight. This feeling may arise from wind on the stomach, with which he is now much troubled; lowness of spirits, chiefly in the mornings. He took some Pilul. Aloes. C. Zinzib., also some soda and ginger, and continued the pediluvium.

September 7th.—In consequence of some mental disquiet, the palpitations recurred, which were removed by pills 12 of Calomel gr. vj. Extr. Belladon. gr. ij. Extr. Hyosc. $\mathfrak{3}$ j. one every night. The Ung. Antim. Tartariz. and the Iodine pediluvia, thrice a week. Pills continued, with Extr. Coloc. C.

September 14th.—Better; but on any irritation his palpitations recur, with pain in præcordia; pulse 96, and rather full; urine red; Omit the day pills—continue his night pill. A mixture ordered of Sodæ Carbon. Sodæ Sulphas. Hydrocyanic Acid, m. j., and Extr. Aconit. gr. ss. in Aq. Menthæ. ter die.

September 21st.—Relieved after a few doses even of the medicine last ordered. The urine now of normal colour, and no uric acid deposit; pulse 90; heart's action subdued, but not enough. Add $\frac{1}{2}$ gr. of the Aconite and one drop of the Acid to each dose of the mixture.

September 28th.—Pulse 84; no pain nor præcordial uneasiness; easy when quiet. Repeat the anodyne-alkaline mixture, increasing the Aconite to gr. iss., and Hydrocyanic Acid to gr. ij. each dose added also some Infus. Sennæ. By the 5th of October, the hypertrophic impulse disappeared, and his feet were warm; pulse 80. He gradually left off his medicines—no gout—which made me expect recurrences; but his chief complaint after this time was from occasional hepatic congestion, which required cholagogues.

At such times the heart would palpitate and act for a time with violence; nor did he lose all symptoms of disturbed function of the heart, till the year 1841, having been under my care, from time to time, till 1843, when I left the country.

A cerebral attack seized him suddenly on the 10th of March, 1839, which was more like a seizure of Paralysis than any thing else. Giddiness; confined pain over right eyebrow; pricking pain and numbness of left side, arm, and leg—cannot move them well; pulse 120; face dark-yellow, and also the *Tunica Conjunctivæ*. On being questioned, he said he had suffered his bowels to become a little confined, but not much; the hands feel as if too large. By mercurial purgatives, actively followed up, he recovered from this attack in a few weeks.

These attacks are often followed by hepatic congestion, and are to be expected in some subjects of heart-disease. He had been going up to his bedroom—he felt a palpitation arise, then a beating in the head; became unconscious for a short time, he was told; and the symptoms I have described came on. Palpitation will excite such seizures, and various functional irregularities may follow. So that, in treating palpitations, we have not only to quiet the increased action, but also to counteract any bad effects from the congestion ensuing in various organs. May not the reflex function be called into play, in such cases; and cause such results, when combined with the irregularity of circulation, which characterises palpitation?

CASE XIII.

HYPERTROPHY OF LEFT VENTRICLE, FROM PERICARDITIS, WITH OBSCURE SYMPTOMS—FATAL: BEGINNING IN INFLUENZA.—Feb. 2, 1837, Grace W., ætat. 37, had had an attack of Influenza; as I was told by the gentleman who had attended her, and who thought there was water on the chest. He said she now requires admission, chiefly for Rheumatic fever, under which she has been labouring a fortnight.

I found her complaining of weakness, hands swollen and cannot be used, little appetite, restless nights, tongue cleaving slightly, has been cupped and leeches. By percussion and stethoscope; no respiratory murmur over any part of the left lung, and puerile

respiration in the right, hypertrophous action of the left cardiac ventricle; pulse quick; cannot lie down in bed. Is now menstruating, but menses scanty. I ordered blister to left side, and Pil. Hydr., Pil. Sapon. C., and Extr. Colchic. Acet. every night, and a mixture of Vin Colchic. Carbonate and Sulphate of Soda, bis quotidie. Feb. 5. The right wrist inflamed, and the inflammation involves the cellular membrane—Calomel and Opium night and morning. On the 9th, diarrhoea came on, with red tongue, which persisted in spite of all we could do, for there were consultations on her case. On the 13th, about half-past four A.M., she was seized with two fits of coughing, and instantly died, though she never had any cough while in the infirmary, nor had she complained of any. The medical resident was in immediate attendance, but could not avert death.

On the 14th the body was examined. The left lung was collapsed, and adherent to 2nd and 3rd left upper ribs; it was solidified, and there was pus interfused. From the left pleural cavity eight pints of pus and serum were abstracted; the pleura itself was covered by an adventitious and pus-secreting membrane; right lung sound. Over the surface of the right cardiac ventricle was observed the granular and lace-like deposition peculiar to Pericarditis;—the left ventricle enlarged; congestion of the gastro-enteric mucous membrane, and a sub-inflammatory state of about twelve inches of the Ileum, at its lower part, and two *Ascarides Lumbricoides* were found thereabouts.

Her history was—she was attacked with Influenza. In a few days there was pain over left lower lobe of the lungs, with crepitation and suppression of the respiratory murmur. Cupping was tried; but she bore it so ill, that the medical gentleman was obliged to resort to stimulants. He tried leeches and blistering, with diuretics. The acute symptoms subsided; tongue cleaved; there was little cough, and her dyspnoea seemed to be caused by the debility; then a rheumatic inflammation seized the right hand, involving the deeper-seated structures; her appetite was good. When she entered the infirmary, she complained of weakness solely; latterly she had had some diarrhoea, but was free then. She made no complaint of any symptoms that might have led one to suspect the mischief existing in the thorax, though from examination and percussion, and from the puerile respiration in the right lung, it

was evident that the left lung did not perform its office; and doubtless the left pleural cavity was in the same state when she entered our infirmary, as when we examined the body. The case is interesting; for it shows the tendency of Pericarditis to cause Hypertrophy; it shows, too, what a serious lesion of a vital organ may exist, without any adequate or proportional manifestation by symptoms; and it shows how Pericarditis may supervene on another disorder, without the medical attendant perceiving it—and in this case the medical attendant was one versed in auscultation; one not long from the schools of medicine, and who had studied under one of the most eminent clinical lecturers and auscultators in London. Surely it is but fair to infer, that had any of the characteristic symptoms of Pericarditis presented themselves, such a man as I have described must have taken notice of them, especially as he was almost daily ausculting on account of the Influenza, and its inflammatory complication.

CASE XIV.

Eliz. P., ætat. 18. August 9, 1838.—The usual signs of Hypertrophy of the left ventricle:—the impulse considerable; pain near apex of heart; slight bellows-murmur with first sound; pulse 98, regular; tolerably strong; no cough; bowels open; worse after eating; menses regular. Calomel, Extract of Belladonna, and Pil. Sapon C. every night and morning. A mixture of Carbonate of Soda, Hydrocyanic Acid, and Mint. Water, thrice daily; Iodine leg-baths. A blister; and for dressing the abraded surface, Ung. Cetac. with Acetate of Morphine.

On the 12th the pulse was reduced to 74; the impulse and bellows-murmur nearly gone. On the 23rd she wished to go home, and was discharged. The Belladonna was successful *as a sedative*.

CASE XV.

FUNCTIONAL AND INFLAMMATORY HYPERTROPHY. January 16th, 1840.—Eliz. C., ætat. 30, been ill about three months, pain in epigastrium, and across side; headach. The pain affects the breath, dyspnœa spasmodica, respiration then exceedingly quick,

46 respirations in a minute; short dry cough; appetite and digestion bad; bowels costive. Having just left off suckling there is as yet no menstruation. By stethoscope, the respiratory murmur is everywhere normal, when quiet, and the spasmodic dyspnœa is not present. The impulse is strongly hypertrophic, with bellows-murmur; and the heart seems enlarged—pulse 100. She has been bled as an out-patient; a blister applied, and mercurials given, but gums not yet tender. V.S. ad 3xij. vesper. R. Calomel gr. ij., Extr. Aconite gr. one-eighth, ter die. A mixture of Magnes. Sulph. in Saline Solution. Jan. 18.—Heart already quieter; dyspnœa relieved; but headach distressing;—Hirudin. temporib. 24th. Heart's action nearly normal; cough and dyspnœa nearly gone. 27th. Feels as well as ever she did; and on the 30th she was discharged well.

Perhaps this person would have done well without venesection. The Aconite and mercurials might have sufficed.

CASE XVI.

CASE OF HYPERTROPHY WITH DILATATION AFTER SCARLATINA.—I was sent for on August 2, 1844, to see the son of Mr. C., ætat. 9, who had not long recovered from Scarlatina, in not a very severe form. The usual symptoms were present of Dilatation, with some slight hypertrophic action. The heart seemed enlarged, and there were considerable dyspnœa and palpitation, with a pulse of 120 to 130; a little pyrexia in the evening, and no pain except after exertions. The sedative powers of Belladonna, with an alkaline carbonate, and sulphate, in a tonic vehicle, soon quieted the pulse, and the boy feels now quite well—having discontinued medical treatment for some time. Heart still too large.

CASE XVII.

CASE OF HYPERTROPHIED LEFT VENTRICLE FROM PERICARDITIS, COMBINED WITH PURPURA.—Chas. D. was admitted Nov. 16, 1843, ætat. 15.—Had Rheumatic fever four months ago—feet and ancles were chiefly affected; as soon as he went to work he felt dyspnœa; gums scorbutic, and bleeding from the slightest cause; Præcordial uneasiness, and great anxiety in his sallow face;

pulse 120 and 130; heart much enlarged; its action tumultuous; a *bruit de soufflet* with first sound over left ventricle, but a murmur is also heard in the cardiac and radial arteries; little or no fluid in the Pericardium. The Aconite was tried, but with no good effect. On the 25th, a medical gentleman pronounced the disease to be Endocarditis in his opinion; and certainly the tumultuous action of the heart looked like what we see in that disease.

On the 25th Nov. three leeches were put on, and there was the greatest difficulty to stop the bleeding. On the 30th he died, and we found the blood everywhere in a fluid state; no coagula anywhere, not even in the heart, excepting a slender string of coagulum in the right auriculo-ventricular opening. Spots of Purpura on the under surface of the right pulmonic lobe. An eroded patch on the mucous membrane of the membrane of the stomach, near its left extremity; patches of purpura, in various spots; the left ventricle of the heart dilated and much hypertrophied; the Pericardium adherent at its upper part; an old adhesion, also adhesions of left Pleuræ Costalis and Pulmonalis; the left Carneæ Columnæ, hypertrophied, but in proportion to the ventricular enlargement; the two lower lobes of left lung collapsed; the liver enlarged.

The chief cause of death here would seem to have been the state of the blood; and the case is interesting by its tolerably strong resemblance to Endocarditis. It is another instance of the tendency of Pericarditis, towards a fatal result, by bringing on Hypertrophy or some other cardiac lesion.

CASE XVIII.

Miss B., ætat. 11, was brought to me in 1842; has never been well since an attack of measles, a year and a half ago. She now is distressed with dyspnoea and palpitation, both increased on the slightest exertion, and followed by headach occasionally; colour of face and lips heightened; except after a paroxysm of palpitation, the lips are then of a dark colour. The physical signs are unequivocally those of Hypertrophy, with some dilatation of left ventricle, the Hypertrophy predominating; a strong bellows-blast with every systole, and slightly heard in the carotids; pulse strong, but regular, and always from 108 to 112 whenever I have felt it;

some tenderness on percussing the right hyperchondria; bowels confined; feverish towards evening; a few ounces of blood, abstracted from the arm, showed the buffy coat. Here the Aconite, with Liq. Potass. were given during the day, and Calomel, with Extr. Col. C., and Extr. Hyosc. at night, for a few nights. Perfect rest; and diet, non-stimulant. The action of the heart became quieter; and there was no buff in the blood, when some blood was in a few days abstracted (partly for the purpose of ascertaining whether there would be any); the pulse was soon at 90; the liver was unloaded, and the hypochondriac tenderness vanished.

There was no doubt of organic Hypertrophy in this case; and it was by long and steady perseverance in the means recommended, that she got better. She continued that treatment until the end of 1843, and in July, 1844, she was sent to me for examination. I found her fast recovering from all undue action or size of the heart. I could not detect that its size was too large; and she can run or go quickly up stairs without thoracic distress; pulse natural. Her age was in her favour, as great alterations are effected in a short time during the period of growth. Still the utmost attention was required for a length of time, before radical benefit was derived.

CASE XIX.

FUNCTIONAL HYPERTROPHY, APPARENTLY FROM RHEUMATIC ACTION.—Mrs. G. came to me for advice on Feb. 5, 1840, ætat. 48, of weakly habit, has had for four weeks, and in consequence of exposure to wet, sharp rheumatic pain running from right shoulder to elbow; numbness of the right ring finger; cannot lie on that side; is worse at night; some dyspepsia; menstruations regular; but subject to Rheumatism these three years; but this sharp attack has disabled her.

I began with Calomel gr. j., and Dovers Powder at night; and the mixture, R. Mist. Amar ℥vij., Sp. Amm. C. ℥iv., Vin. Colchic. 3vj., Cochl. largum ter die. Feb. 12th. Better at night, and can lie on the right side for a short time. She went on well till March 11, when she complained of much pain, for which I ordered Pil. Sapon. C., with Extr. Coloc. C., and Extr. Colchic. Acet. Repet.

Mistur. Again mended; when, on April 1, pain again severe. I ordered a lotion to be applied in the manner, and made up as recommended by the intelligent Mr. Wansborough, in the *Lancet* of 7th March, 1840. April 8. A great deal better she said she was, as to pain, but she now complained of dyspnœa, and of a severe beating of the heart. I examined the chest, and found decided hypertrophic action of the left ventricle, a *bruit de soufflet* with the first sound, and pulse 120, though the pulse, as well as the general symptoms, indicated much debility; red urine. The Chloride of Mercury gr. iij., with Dovers Powder gr. viij., om. nocte. R. Sodæ Carbon. ℥j., Potass. Carbon. ℥j., Extr. Aconit. g. j., Aq. Menth. Vin. ℥j., ter quotidie. By the 22nd of April, the beating had ceased, and the pulse in six days was reduced to 80; and before the end of May she was discharged, quite well. The lotion was never discontinued, and uniformly gave great relief. The chest affection, I firmly believe, would never have occurred, had I begun with prescribing alkalies. The case, I think, also shows the beneficial influence of the Aconite; although the action of the heart was violent, V.S. was out of the question, on account of the debility.

CHAPTER VI.

D I L A T A T I O N.

DILATATION may be an idiopathic disease, and exist under three forms—first with the cardiac walls thickened; this is Dilatation with Hypertrophy combined: secondly, the walls may be of their natural size; but the cavity is enlarged: thirdly, the cavity enlarged and walls attenuated. The attenuation may be such that the most substantial part of the left ventricle is only two lines in thickness instead of thirteen, the natural thickness; but extreme attenuation is more common in the right ventricle.

Dilatation takes place more in the transverse than in the longitudinal direction; thus an unusually spherical form is communicated to the heart, and the diameter of the organ near its apex is almost as wide as its base; the apex itself can hardly be distinguished. This last fact has been laid down as the best criterion for determining when there is Dilatation or not. Dilatation is often attended with softening it is said, and thus may give rise to rupture of the heart. I have never met with an instance of rupture from this cause.

Difficulty has been felt in distinguishing *post*

mortem, whether the cardiac cavities have been merely distended or dilated; but we shall succeed in satisfying our minds by recollecting the altered form of the apex, and the following criteria laid down by Laennec.

A DISTENDED AURICLE is tense, and through its thinnest parts shows distinctly the dark blood within; when cut into, it returns at once to its natural size.

A DISTENDED VENTRICLE is found enlarged, firm, tense, but these conditions disappear, on pressing out the blood.

A DILATED AURICLE does not appear so tense, and its parietes are more opaque. When cut into, it maintains almost the same size as when full.

A DILATED VENTRICLE has no appearance of tension; it is more or less flaccid, and the enlargement remains, after the blood has been evacuated.

We may, even during life, mistake temporary distention from relative plethora, &c., for organic Dilatation, unless we have opportunities of frequently examining our patients; but distention is continually varying, in the same day, and under the influence of slight causes it arises suddenly and may as suddenly leave the patient; whereas Dilatation is slowly developed, it varies but little daily, slowly yields to treatment when cured, and after death does not disappear, as mere distention does. The physical diagnosis has been described.

Dilatation arises out of a comparative or real weakness of the muscular fibre, and it is the mechanical effect of over-distention. By comparative weakness, I mean its not having strength enough to resist abnormal pressure; by real weakness, its yielding too readily to a pressure which, if healthy it ought to bear. Blood accumulated within the

cardiac cavities presses from centre to circumference; and as soon as the pressure overcomes the resistance of the parietes, they yield and become dilated. Of course the thinner the parietes the more probable is Dilatation; wherefore the right ventricle is more frequently dilated than the left, and the auricles than the ventricles.

To produce permanent Dilatation, causes must operate for a certain time, or else at very short intervals; and probably in many cases, there is a predisposing cause in deficient power of the heart.

The exciting causes are whatever tends to debilitate the system. In men as in women, these sources of exhaustion are various and numerous, and need not be mentioned in detail. In women profuse menstruation is a not unfrequent cause; all diseases producing debility; typhoid, and other fevers, &c.; depressing moral causes.—Dilatation may be congenital. Another numerous class comprises all obstructions to the circulation; but these obstructing causes excite Hypertrophy as well as Dilatation; and it depends upon the resisting power of the walls of the cardiac cavities, whether Hypertrophy or Dilatation follows. If there is strength enough to resist the undue pressure, the former state, if not, the latter follows. Dilatation usually attacks both ventricles, but occasionally only one, and that is commonly the right. The auricles are never dilated except when their valves are diseased.

SYMPTOMS.

The general signs are such as result from an in-

sufficient action of an enfeebled heart, and as the volume of blood is not propelled as it should be, the blood accumulates in the cavity, whence nature drives it forth by a violent action; thus we have palpitations more or less distressing, frequent or prolonged, according to the extent of the disease. Over exertion or mental excitement will cause fearful paroxysms; and these palpitations form perhaps the most striking and the most troublesome symptom. There is a tendency to syncope; and dyspnœa is constant; the pulse is soft, feeble, and perhaps small; in some cases it becomes intermittent or irregular. There is a chilly surface of body and extremities. Congestions occur in various organs; in the lungs, congestion causes dyspnœa; cough, with thin mucous sputa; œdema pulmonum, when terrifying dreams and starting from sleep attend; then passive hæmorrhages of dark grumous blood. The engorgement, as the late Dr. Hope describes, is propagated backwards to the right side of the heart to the great veins and to all their branches, then serous infiltration takes place, first in the lower extremities. The capillaries of the serous membranes become implicated, and Hydrothorax, Hydropericardium, and Ascites greatly add to the mischief and the danger.

Hepatic and gastric disorders, and signs of cerebral congestion are not uncommon accompaniments. The face becomes purple and dark coloured, especially the lips, cheeks, and nose, or it becomes exanguious and of a dusky leaden hue, with lips livid or colourless. The slightest exertion fearfully exacerbates the symptoms, and may be suddenly fatal; the reason of which is well laid down in Dr. Car-

penter's excellent work on Human Physiology. "The valves of the veins consist of pocket-like folds of the lining membrane, which allow the blood free passage as it flows towards the heart, but check its reflux into the arteries. Hence it follows, that every time pressure is made upon the veins, it will force towards the heart a portion of the blood they contain, since it cannot be driven in any other direction. Now, from the manner in which the veins are distributed, some of them must be compressed by almost every muscular movement; these will become refilled as soon as the muscles relax; and they will be again pressed on, when the movement is repeated. Hence a succession of muscular movements will act the part of a *diffused heart*, over the whole of the venous system, and will very much aid the flow of blood through its tubes. It is partly in this manner that exercise increases the rapidity of the circulation. If the blood is brought to the heart by the great veins more rapidly than usual, the heart must go through its operations more rapidly, in order to dispose of the fluid; and if these actions be impeded, great danger of their entire cessation may exist. Hence the importance of bodily tranquillity to those affected with diseases of the heart and lungs. A sudden change of position, from sitting or lying, to standing, has produced immediate death in numerous instances."

Physical Signs.—As Hypertrophy is characterised by increased impulse, with diminution of sound, so Dilatation is marked by increased sound and diminished impulse; and, in proportion as one or the other condition predominates in mixed cases, so will

the sound and impulse vary in degree of strength or intensity of loudness. By auscultation we can often measure the dimensions of the heart in contact with the walls of the chest. A late writer says, "In cases of greatly enlarged heart, where there is not only Hypertrophy but Dilatation of the walls of the heart, you will find that this viscus occupies a great part of the front of the chest, from the upper margin of the second rib, extending to the epigastrium, also around the left side and the axilla, and passing two or three inches to the right of the sternum."

In a healthy man of medium stoutness, and possessing a well-proportioned heart, the heart's sounds are confined to the præcordial regions alone; that is, they can only be heard under the inferior half of the sternum, and under the space comprised between the cartilages of the fourth to the seventh left ribs.

The late Dr. Hope estimated, by observing how far the first sound resembled the second; making allowance for stoutness or leanness, youth, pulmonary condensation, &c.

The general signs of deficient circulation will assist the practical man in measuring the degree of the Dilatation, as well as in treating it.

There will be increased dulness on percussing the præcordial region; though we must not forget that consolidation, or hepatization, as it has been mis-called, of the anterior and overlapping borders of the lungs, may give rise to a similar dulness.

In Dilatation of the right ventricle, the physical signs will be found in the right præcordial region—to the right of and under the lower sternum, and in the epigastrium; and the obstruction of the venous

system is soon apparent at times, in distended jugular veins, &c. The signs of Dilatation of the left ventricle are to be sought for in the left præcordial region; and the first, or early symptoms, of this disease are derived from the pulmonary congestion, in like manner as the early symptoms of dilated right ventricle are those of hepatic disorder.

The results of the dilated left ventricle become ultimately the same as those of the dilated right, in the retrograde course we have already described.

PROGNOSIS.

If the degree of Dilatation is moderate, treatment is not required, and the person may live to a good old age with care; but when it is so great as to interfere with the action of the vital functions, causing very considerable and permanent dyspnœa, the disease will have a tendency to progress, and will increase; every means must be then resorted to, to avert the danger. But in Dilatation, as in Hypertrophy, we must never despair of the case, even when it appears to be organic, or has really become so. I say, appears to be organic, on account of the close resemblance which functional will sometimes bear to organic affections. We must not despair of a cure even; and as to alleviation of distress and prolongation of life, they can mostly be obtained by appropriate treatment. Our prognosis must materially depend on the nature of the disorders with which the Dilatation is complicated; the effect of remedies, the progress of symptoms, or the period at which

we are called in ; for instance, if the Dilatation be combined with diseased valves, and if there is no compensatory hypertrophic action at all, and only defective muscular power, our prognosis must be a very gloomy one ; or if dropsy is present (which is usually the last symptom) and has been removed once or twice in previous attacks, we have little or no hope. In Dilatation with diseased valves, we must give no hopes, even before remedies have been tried ; but if they have, and have failed, death is near at hand probably ; yet simple uncombined Dilatation is curable, may exist for many years, and never seems to increase ; indeed, in one case, which occurred not many years ago in my practice, Dilatation of the left ventricle was the cause of a saving of life. It was the case of a gentleman, about forty-eight years of age. By auscultation, and by the general signs, I had ascertained that his left ventricle was dilated, and its parietes thinned ; the pulse was intermittent while in health, and only became regular when he was ill. This gentleman required stimulants, to maintain an efficient circulation ; but he laboured under a good deal of dyspepsia for several weeks. He neglected the dispeptic symptoms, until one night, after the excitement of a public dinner, he was seized with as severe an attack of apoplexy as I have ever seen any person to recover from. Bloodletting at first, and purgatives afterwards, formed the plan of treatment, and the latter were especially serviceable in relieving the overloaded stomach of its undigested mass at first, and the liver ultimately, which doubtless was overloaded with fluid. Had this gentleman's left ventricle been pos-

sessed of its normal propelling powers, a fatal extravasation must, in my opinion, have taken place on the brain. The detraction of blood was pursued too far, for, after the recovery of consciousness, I strenuously resisted further blood-letting, as I knew the state of his heart. My advice was neglected, and the consequence was, that his constitution had to labour hard, to restore the uselessly expended globules and fibrine of his blood; and on foggy days I have seen him gasping for breath, like a fish out of water. He suffered more or less for some time, whenever the atmosphere was not clear and well oxygenated.

TREATMENT OF DILATATION.

The combination of Hypertrophy with Dilatation is most commonly met with in practice, and its treatment requires all the judgment which experience can bring forward. We have to make up our minds as to the predominance of the Hypertrophy over the Dilatation, or of the latter over the former. A mixed treatment must be adopted, and it must be adapted to the state of too much action or of debility existing in the case. In all cases the secretions must be maintained, in full, and in some cases, in what I would call a vicarious activity. If Hypertrophy predominate, more or less detraction of blood, general or local, will be necessary, and the oppressed circulation must be relieved by hydragogues, diuretics, or sudorifics, combined with sedatives, to control palpitations and procure rest. We must be careful of too much detraction of blood, lest we exhaust the

vital powers thereby, and increase the Dilatation; and we must rely chiefly on medicine.

The treatment of Dilatation is very obvious; we have to try to restore strength and vigour to the affected ventricle, to obviate palpitations, and relieve secondary or consequent symptoms. The routine of V.S. Digitalis (which is almost certain to be prescribed), and of debilitating drugs, is highly objectionable; nor should a low unnutritious diet be allowed in any case of Dilatation whatever; yet such a routine used at times to be met with, perhaps on account of the quick pulse and the dyspnœa. If the degree of Dilatation is moderate we should avoid treatment by medicines; but merely watch, and manage by a generous diet, with a maintenance of free secretions. But if the disease be severe we may be sure it will go on from bad to worse if unopposed. Here our indications of treatment are to cure the Dilatation, and to obviate occasional complications. We must look to the history and see whether the blood is in a chlorotic or anæmic state; or whether there is general debility as well as local, without any marked deficiency of fibrine or of red globules in the blood.

Profuse menstruation is a not unfrequent cause; this must be stopped, if existing at the time, by the usual means. Here injections of Sulphas Zinc and Alumin, tepid or cold, will be beneficial by inducing a local tone, and if there is a tendency to diarrhœa, combined with the menorrhagia, the Extract or Tincture of Monœsia will be useful with some Pil. Hydrarg. and Pil. Sapon. Comp. at night. If these fail, the acetate of lead may also be given, for it is of

paramount necessity that this discharge should be stopped. When the blood is deficient, in red globules or in fibrine; the chalybeates, the Subcarb. Ferri with R. Conii; and if the capillary circulation is defective and the skin chilly, a combination of chalybeates with Iodine. The diet, it is obvious, must be nutritious, and sometimes stimulus may be added.

If there is general debility, tonics and anti-spasmodics. These medicines are of slow action rather; though ultimately successful. There is one remedy which I am disposed to think will prove advantageous; and that is Strychnine. I have used the Acetate in doses of one-sixth of a grain. When first I tried it, I did not entertain much hope of success; because this substance seemed to me to act upon the voluntary muscles, and not upon those supplied by the organic system of nerves. Nevertheless, this remedy will give great help and really seems to act directly and in no long time upon the muscular fibres of the weakened ventricle; in the same way as we see it exert its influence over the affected muscles in paralysis. As it possesses a cumulative action we must watch it most closely, for one tetanic spasm might terminate existence. With attention there is no danger to be apprehended from it; for the various muscles will feel twitches in them, before that happens.

Now while we are pursuing this plan, we must remove as much of the load upon the heart as possible, by keeping the secretions in full activity. Cholagogues with tonics and warm purgatives will keep the liver as empty as possible; and thus cause less venous blood to be sent to the heart. At times

when purgatives disagree, we may give diuretics with tonics; but, above all, we must maintain a free action of the cutaneous functions, not by exhausting diaphoresis, but by warm clothing, and occasional stimulant baths. The hot air vapour bath is eminently useful; only in most cases the head must be left out, on account of the gasping which the hot air will often occasion.

Iodine baths, two or three times a week, excite increased action of the cutaneous vessels, which lasts for some time. Some cases may be benefited by a sudorific at night, for some two or three weeks, but antimonials should be avoided. That remedies determining to the skin are of signal advantage in relieving inward congestions, is an unquestionable fact, and needs no explanation. The importance of the cutaneous capillaries is truly great. Are there not facts leading to the belief, that a new force is produced while the blood is flowing through the capillaries—a force sufficient, in some instances, to maintain the circulation by itself alone.—See Carpenter's *Human Physiology*, paragraph 505, et seq.

These various modes of treatment may all have to be tried, one after another; but they all will act in a similar way, by giving strength, and by lessening the quantum of blood in the heart.

The last indication is so important, that we may even have to take away a few ounces of blood by cupping, if the heart seem to labour from over distention, which, however, is not likely to occur if we look to the secretions and excretions; for by maintaining a free action of them, the blood is both purified and lessened in quantity.

Guided by the foregoing considerations, we shall

find much judgment requisite in selecting the remedia tempestiva; yet the treatment in general use is, as Pigeaux says, as empirical and irrational (*banal*) as was usual with our predecessors, though few diseases can be more complex in their mode of existence, or more varying in their complications, than Dilatation of the heart may be. Do we not in such cases hear recommended or meet with a free administration of Digitalis, for the removal of the quickness of the pulse, and of palpitations; yet the only rational and effective way to remove symptoms, is by removing the cause of them, when we can do so. Now debility of certain cardiac muscular fibres is here the cause; and the quickness of pulse and palpitation are both efforts of nature to prevent, as much as possible, accumulation of blood in, and increased distention of, the cardiac cavity. I have sometimes given Digitalis, but as a diuretic, and chiefly to patients with some degree of sthenic action in their system; and in doing so, I have always combined it with tonics, and even stimulants, while I have prevented sickness by the Hydrocyanic Acid or Creosote. Nothing, however, will prevent its cumulative action if we continue it too long. This combination of Digitalis with tonics, &c., may seem to many very unphilosophical; yet it will be found to work well in practice.

How Digitalis acts in favouring the tendency to further distention or Dilatation, has been already explained. I fear Digitalis may have been the occasion of even sudden death, in some instances, through its cumulative action. I have met with one instance in which Colchicum thus caused death. When the Dilatation causes congestion of the pulmonary mucous

membrane, expectorants must enter largely into our prescriptions: the Pil. Scill. C. with Pil. Sapon. C., and Pil. Hydr., will often act admirably well, together with a stimulant diuretic and a tonic mixture in the day.

The Dilatation will, in other constitutions, seem to excite functional disturbance of the stomach, probably from congestion of the capillaries of the mucous membrane. Here I have found the Oxide of Silver a most excellent sedative remedy, and one of the best preventives of palpitation we can employ. In all cases, rest, and indeed absolute quietude of mind and body are necessary.

These various remedies form our treatment of Dilatation, when of a serious degree.

We have now to consider the paroxysmal complications. Of these, palpitation is by far the most distressing; indeed, whoever has witnessed these paroxysms of palpitation and of dyspnœa in this form of heart-disease, need not be told of the danger of such attacks, and of the difficulty in treating them; so as to avert death in extreme cases, and to produce any thing like comfort in others. Laennec records an instance of palpitation of this kind, continuing eight days, and the pulse beating constantly from 160 to 180 per minute. Palpitation may be a mere increase of frequency in the heart's action, or may consist of increased frequency and increased impulse too. Before we attempt any treatment, we should try to ascertain the causes, which may be of a moral or physical nature. Any sudden moral emotion may excite a paroxysm; the treatment of which must be obvious. The physical causes are any muscular exertion;—at times, even a very slight

one:—also any temporary fulness or congestion of the thoracic viscera, especially of the heart, from cold, from suppressed excretions, too full a diet, too much liquid taken; or, from a temporary increase of debility in the propelling power. Any affections of the stomach, causing gastric irritation—or any source of irritation, acting through the reflex function, may cause palpitation.

We must first ascertain, whether there is too much blood in the heart, either absolutely or relatively to the heart's power. If there is, some blood must be abstracted by lancet, or by cupping, or by leeches; but this must be avoided if we can. Dr. Hope has seen an indiscreet blood-letting fatal, and more than once. Much will be done in prevention by purgatives, which will prevent over distention through a relative plethora. The sedatives, most serviceable, will be Belladonna, Aconite; where there is diarrhoea, Opium, combined with carminatives and stimulants, according to symptoms. The Hydrocyanic Acid, with Alkalies, where the stomach is out of order; and if there is time, the Oxide of Silver, which last remedy will both remove and prevent, and seems well adapted to act sedatively upon the nerves of the reflex function. But sometimes the distress is so great, that we must remove it as quickly as possible, then plunging the feet and legs into water as hot as can be borne, as advised by Corvisart, will relieve quickly; or, I have several times afforded great relief by raising an instantaneous blister, and sprinkling the abraded surface with Pulv. Folior. Digital. Great and sudden relief has been thus afforded; for which, our patients will be very grate-

ful. The *Digitalis* administered in this way, causes no annoyance; and the almost immediate relaxation of the palpitation, enables us to go on with our permanent system of treatment, while the shortening of the duration of the paroxysms prevents those ulterior consequences, which, in the shape of various congestions, never fail to follow protracted palpitations. On account of these congestions, I generally give, after violent palpitation, Calomel, or Blue Pill, variously combined, for a few nights; that organic disease of liver, or kidney, may not be superinduced.

The other occasional complications, are dyspnœa and dropsy. The former will be removed generally by what is best adapted to remove the palpitation; for the two either appear together or the one soon follows the other. As to dropsy, that will be treated in the Chapter on the Diseases of the Valves.

A dry, bracing atmosphere should be selected, in all cases, except where there is much expectoration, when a more humid atmosphere will be preferable.

CASE XX.

DILATATION FROM PROFUSE MENSTRUATION, OR UTERINE DISCHARGE.—Miss S., ætat. 45, came to me on June 18, 1840, been ailing five years; of thin, spare habit; face livid, sallow and cardiac; lips darkened or bluish; one glance was sufficient to point suspicion to the heart. The only apparent cause of debility existed in profuse menstruation, which lasted and was copious from eight to fourteen days, leaving her always in a very debilitated state, with a lumbar pain. The pulse small, feeble, and 120. Great and constant dyspnœa, which had increased of late; palpitations at times violent, and almost continued; appetite pretty good; but any excess in diet increased much the palpitations; urine normal, except after violent palpitations; considered herself

very bilious; bowels regular; the ancles and legs swell up to the knees. By percussion, great dilatation of the heart was ascertained, and over the left ventricle a bellows-murmur with the first sound, which was loud, short, and sharp; the liver was not to be felt below the right ribs on percussing that region. R. Extr. Aconit. gr. j. Pil. Hydr. ʒss. ft. pil. 8. Cap. j. nocte maneque. A mixture was ordered of Infus. Calumb. Sodæ Bicarb. Sp. Ammon. C. and Hydrocyanic Acid. Diet nutritious. Iodine Pediluvia.

By the 27th of June, feels much better; the dyspnœa relieved, and no palpitation unless she exerts herself; pulse 96; legs still swell. August 1st.—Legs do not swell; can now walk with much less dyspnœa; her last period continued 14 days; still the bellows-murmur, but subdued. I now ordered Quinine and Sulphuric Acid. September 7th.—Now feels comparatively well and pretty strong; is obliged to walk about a good deal; menstruation continued seven days; she wished to discontinue her medicine, though the Dilatation was but little reduced, and though I advised her to continue; but she was going to travel for a time and could not. On March 20th, 1841, she again sent for me, having caught cold and her old symptoms having returned; dyspnœa; extreme palpitations while sitting still even; pulse 136 and small; pains in chest and through shoulders; expectoration difficult; thoracic phenomena as before, with mucous rale in upper and middle lobes; surface cold and feet also; the heart seems to struggle hard; no pyrexia. R. Extr. Aconit. gr. j. Pil. Hydr. ʒij, Pil. Scill. C. ʒij. ft. pil. 16, Cap. j. nocte maneque. R. Infus. Calumb. ʒvij. Sodæ Bicarb. ʒij, Sp. Ammon. C. ʒiv, Vin. Ipecac. ʒiv. R. Opii ʒiss. Cochl. largum ter die ex Dec. Hord. To apply a cloth steeped in hot turpentine, over the chest, where the pain was situated.

March 30th.—All the chest symptoms much ameliorated; cough easy; sputa trifling, and the pain gone. Yesterday, some diarrhœa, which weakened her; the pulse feeble and intermittent every eighth or ninth beat, then one intermission, then two beats, and so on. The diarrhœa was stopped by Mixt. Cretæ c̄ Opio, with appropriate diet—that is, excluding solids—and six or seven glasses of wine daily. This attack went off, and the pulse became regular though weak; the *bruit de soufflet* still, but no dropsy. I ordered the Acetate of Strychnine, as the floodings had now left her.

In three weeks, I could hardly hear any *bruit de soufflet*; and she felt so comfortable and was again going on a journey, that I saw no more of her. I would not allow her to continue the Strychnine.

On April 23, 1842, she sent for me,—a recurrence of bad symptoms, and dropsy; great anasarca over legs and abdomen, but I could not satisfy myself as to ascites. I ordered Pil. Hydr. Pil. Scill. C. and some Digitalis. A mixture of Infus. Calumb. Infus. Armorac. Potass. Acetas. R. Scill. and R. Opii. The drop-sical symptoms soon vanished, and she again left the country for London in a more comfortable state she said.

May 8th.—I was again sent for: she was just returned from London; thought she should have died in the night from the excessive palpitation and dyspnœa; urine scanty; bowels confined. Again diuretics, tonics, and sedatives. May 10th.—Improving. May 25th.—A better night; no dropsy, but great weakness. Quinine with stimulants. May 29th.—Sent for in a hurry; a dreadful paroxysm; a very hot pediluvium relieved her. In the evening she was still fearfully troubled with dyspnœa and palpitations; the action of the heart tumultuous, diffused, and feeble; deadly faintness; flatulency; no urine nor stool; pulse small and intermittent; skin dark yellow and in a clammy sweat; a tightness and pain at the epigastrium and in the loins. I vesicated with Liq. Ammon. Caustic. and powdered the surface with gr. 6 Pulv. Fol. Digitalis. I ordered some of Battley's Liquor Belladonn. with Sp. Æther. Nitric., expecting to see her no more. May 30th.—Found her much better, instead of being a corpse. The remedies had been very serviceable, and great relief was soon derived from the vesication; the heart's action less tumultuous; no epigastric nor lumbar pain now; pulse amended in character; dyspnœa less; passes urine freely, but still costive. I again powdered the blistered surface with 3 grs. Pulv. Fol. Digitalis, and continued the Æther and Belladonna, in a tonic. Brandy-and-water and nutritious diet. A Pilul. Aperients. May 31st.—Wonderfully better; pill acted well; slept well after 3 P.M.; she is now lively; the deadly faintings gone; cardiac impulse reduced. On the 13th of June she was again so comfortable that I did not again visit her till the 27th, when I found the anasarca had been creeping on, and was now threatening; while the effusion gave no relief to the chest-symptoms. Acu-

puncture lessened the fluid in the legs, and I attended her on to the 11th of September, with little hope of doing more than delaying the moment of her death. I then departed for the continent, and she died before I returned, seven weeks afterwards.

This was as bad a case of Dilatation as the medical man is likely to meet with, and shows the great influence of medical treatment, as well as the benefit of *Digitalis* endermically applied. The sedatives employed were successful as far as they could be. This disease had been forming for perhaps eight or ten years, dating from the profuse menstruation, for that seemed to me the origin of the mischief; and probably the Dilatation had begun and increased long before the patient's attention was directed to her heart or chest.

The result would have been very different, if the menorrhagia had been first checked, when it first appeared, then stopped. 'Tis true, women have a great prejudice against meddling, as they call it, with the menses, yet I always overrule it; and if menstruation lasts eight, or twelve, or fourteen days, leaving debility after it, I always try to check it after the morning of the fourth day, by the general and local remedies already mentioned; and have never had reason to condemn the practice. Where, however, the constitution does not suffer from so long protracted a menstruation, but bears it well, or seems relieved by it, we of course ought not to meddle with it.

CASE XXI.

CASE OF DILATATION OF HEART FROM PROFUSE MENSTRUATION, FOLLOWED BY AMENORRHŒA, LEUCORRHŒA, &c.—July 10, 1841. Miss C. P., ætat. 18, usually of delicate health; now sallowness of face, which is also livid and cardiac; lately profuse menstruation; on Christmas last quite a flooding, but since then amenorrhœa. By stethoscope, 1st and 2nd sounds nearly alike in sound; 1st sound sharp, clear, and loud; no Hypertrophy; sound widely extended over left præcordial region, and to be heard to the right of the sternum for more than an inch; bellows-murmur heard in the carotids also; palpitations violent, so that she dare hardly move; breath very short; pulse quick and feeble; extre-

mities and surface of body obstinately cold; can lie down in bed and sleep without startings or awaking in fright suddenly; head-ach, increased by the palpitations; lately costiveness, from hepatic congestion; stools scanty and light coloured; says she has passed some Gallstones; flatulency and indigestion, which always exacerbates; leucorrhœa to a considerable extent; the jugular veins full and distended, but no undulations in them. Pills of Calomel, Extr. Coloc. C., and Extr. Hyosc., and a purgative mixture next mornings after the pills. A vaginal injection of Sulphas Zinci and Sulphas Alumin; also a mixture of Solution of Ioduretted Hydrionate of Potass with Vin. Ferri. July 24.—Much bile had passed, which, she said, had relieved the hepatic congestion, consequent on the obstructed cardiac circulation; the face looked clear; leucorrhœa gone; skin of better temperature; palpitations still troublesome, but only when she erred in point of diet or quietness; the *bruit de soufflet* trifling. To continue the Iron and Iodine, but with Extr. Belladonn. added.

Sept. 25.—Very much better; the cardiac parietes evidently much strengthened; the first sound becoming more normal; palpitations hardly any, and at long intervals; but no menses. Chalybeates with Aloes. Nov. 18.—A diarrhœa after ten days, which was soon stopped, and the treatment resumed.

She continued under treatment till June, 1842, when she was quite well; and menstruation regular, lasting five days.

I have no doubt that this case would, but for treatment, have become fatal in the end; because she was getting sensibly worse every week.

The greatest trouble to the medical attendant in such cases, is the impatience to have the menses restored quickly, as all is attributed to their absence; yet time is always required before they will appear; and I have had patients who have left the Infirmary perfectly well, who still were not satisfied, because the periodical excretion did not appear, yet who did not remain at home six weeks before they became quite regular. If the body is put into health and vigour, the menses will soon follow.

CASE XXII.

Mrs. D., ætat. 39. Sent for me April 8, 1843. Face usually florid, now sallow, and livid in parts; menstruation of late irregu-

lar; for the last three months, dyspnœa on ascending stairs, or walking quickly, with palpitation; has been ailing for a long time, with some shortness of breath; some slightly hypertrophic impulse of left ventricle; the sound of Dilatation heard over a space circumscribed by lines extending down the left margin of the sternum, along the lower edge of the left rib, beyond its cartilage, and down a little to the right of the left nipple; bellows-murmur; pulse quick, with some coaty feel in it,—120; no cough; no effusion in lungs, nor abnormal mucus in the pulmonary air-cells; no œdema; headaches; and indigestion; no lumbar pain, though urine is rather scanty.

R. Liq. Potass. ʒiij. Ext. Aconit. gr. j. Syr. Aurant. ʒss. Solut. Sodæ. Citrat. ad. ʒvj. Sexta pars ter quotidie pro dosi. R. Calomel gr. j., Pil. Scill. C. gr. iv., Ext. Hyosc. gr. j. ft. pilula horâ somni quotidie sumenda. April 15. Much better; pulse 96; palpitations lessened; felt yesterday and day before much better than to-day, which is close and warm. The Bicarbonate of Soda was substituted for the Liq. Potass., and the dose of Aconite doubled. By the 6th of May, she could walk better, and breathe more freely; and from this time, went on well; took some Iron and Iodine; and I left her.

In August, 1844, I had an opportunity of examining her chest, and found the heart reduced to its normal dimensions nearly; her face of a florid, healthy hue; pulse normal; she can walk about, or upstairs without any distress, though she is still cautious how she exerts herself; no bellows-murmur at all.

This case seemed to be one of decided Dilatation, not merely functional, but organic; and the Dilatation had been of some duration, probably, much longer than appeared in her history to me; for we know that Dilatation must proceed to a considerable extent, before it will attract the patient's notice.

CASE XXIII.

Mary W., June 22, 1837, ætat. 18; face pale and livid; never yet menstruated; extremely violent palpitations, even when lying down; the sound of Dilatation widely extended; feet and surface of body cold; a dry cough; pulse small and frequent; Dyspnœa;

been ill, or ailing, fourteen or sixteen months; bowels regular; urine not free.

R. Pil. Hydrar. $\mathfrak{z}$ j., Extr. Hyosc. $\mathfrak{z}$ j. Pil. Aloet. $\mathfrak{z}$ j., ft. pil. 20. ij. alt. noct.; and Haust. Aperiens, Sequent. Auror.

R. Ferri. Carbon. $\mathfrak{z}$ ss., Liquor. Belladonn. g^{tt} . j. ter quotidie.

In July, I added some Solution of Ioduretted Hydriodate of Potash to the Iron. The first symptom, after taking the Iron, seemed to be drowsiness, which required for its removal some Calomel purges, with Colocynth.

She continued to have less and less palpitation, until all cardiac disturbance ceased; and she was at length discharged, quite well, on the 3rd of August. There is no note of menstruation having occurred; but I do not doubt its having occurred, while in the Infirmary, or else it came on soon after her discharge, while at home; for she had no recurrence of her heart symptoms, and I should have been told, if she had. The change of air, and the home-employments, often did cause the periods to appear, soon after a discharge from the Infirmary; as I have already remarked in Miss C. P.'s case. This case of Mary W. had every appearance of being organic, nor had the heart quite regained its healthy dimensions; neither was the first sound quite what it should be. Nature, no doubt, perfected the cure.

CASE XXIV.

Jan. 14, 1841.—Clara P., ætat. 24, been ill twelve months with palpitation and cardiac disturbance; cannot exert herself; amenorrhœa for the last three periods; and there are no signs of any nîsus menstrualis; respiratory murmur good; but the heart acts with too much noise and impulse over a large space; a whiffing sound, not a bellows-murmur, with the first sound, to the left of sternum; a pain near left nipple; pulse 108, and rather full; been getting worse gradually, but latterly very sensibly so; skin not cold; can lie on right, rather than on left side.

Hirudin x., part. dolent. Empl. Canthar. sterno et thorac. dextro. R. Submur. Hydrarg. gr. xvij., Extr. Aconit. gr. iij., Pil. Scill. C. $\mathfrak{z}$ j., m. ft. pil. 12. Cap. j., nocte maneque. A mixture of Bicarbonate of Soda with Hydrocyanic Acid. Jan. 19. The Mercury was omitted; the cardiac phenomena much re-

lieved. Jan. 23. Caught cold; and there was a return of impulse, with a cough and pyrexia. Eight leeches to sternum, and add $\frac{1}{4}$ gr. Extr. Aconit. to each dose of the mixture. At night, a Pil. Sapon. C., with Ipecacuan. and Extr. Col. C. By the 28th the undue impulse was diminished, and there were no palpitations. On the 11th of February she was well enough to be discharged, but cautioned as to her conduct. She took with her Aloetic pills to induce the catamenia, which afterwards came on. This person was becoming worse; and the catamenia having stopped, the blood becoming more and more deteriorated, would have increased the cardiac Dilatation to a fatal extent ultimately.

CASE XXV.

Oct. 21, 1841.—Sarah C., ætat. 22, face sallow, livid, cardiac; much anxiety in her face. First menstruated seven years ago, but the excreted fluid has always looked more like (what the mother called) angry water, than any thing else; face and head swell; a husky cough, but no indications of pulmonary mischief by the stethoscope; considerable Dilatation of left ventricle, with slight bellows-murmur with the first sound; some increase of impulse; palpitations, increasing a headach which is always troublesome; pulse small, and 112; flatulence, and gastric symptoms; bowels regular; feet and hands cold; been unable to run without dyspnœa, and at times palpitation, these more than eleven months; has been worse lately, so as to force her to seek relief.

After a Calomel and Colocynth pill and aperient draught, she took the following powders—R. Ferri Carbonat. $\mathfrak{z}$ ij., R. Digital. m. x. Liquor. Belladonn. (Battley's) m. j., ter quotidie. An Iodine hip-bath twice a week.

On Nov. 2, menstruation occurred, and fluid of a better colour; pulse 84, and fuller; she is fast improving. On Nov. 25 she was discharged; her skin of healthy colour; and the cardiac signs all gone, so that she can walk fast without any distress. She was put upon a plan of treatment, as the Dilatation was not gone, and might return. She recovered completely ultimately.

CASE XXVI.

May 20, 1839.—Mrs. I. J., ætat. 40, subject to weak circulation for some time; chilly skin and extremities; had been aguish of late, suffering from rheumatic pains, at regular periods of return; was suddenly taken ill with extreme dyspnœa, and seeming stoppage of the heart's action. By maintaining a recumbent position for a considerable time, and by stimulants, she recovered from the attack, in a degree. There had been occasionally, of late, attacks like those of syncope, to which palpitation succeeded; and always after having eaten any thing at dinner that disagreed, great depression would follow until the deleterious gaseous matter had eructated. She had remarked that the more violent the rheumatic pain in the right rectus femoris, the better she was, as to the thoracic symptoms. I found, on examination, considerable and permanent Dilatation of the left ventricle, with *bruit de soufflet* at the first sound, heard up the carotids; some Hypertrophic impulse; swelling of the jugular veins; bowels costive; urine and menses normal.

Quinine, anti-spasmodics, and stimulants were given; and she could not get up from her bed in the morning without first taking some Quinine. Every means of exciting a healthy action of the cutaneous capillaries were resorted to. The impulse did not appear to be organic, but only the effect of palpitations; and it was probably an effort of nature in aid of the circulation. Several who saw her, did not think she would recover. When the impulse was gone, Iodine and Chalybeates were given. This case required a treatment extending over more than two years in all; when at length, without any marked or sudden change, the distress gradually ceased, and she completely recovered, so as to walk, or run, or exert herself as any one in health can do.

I, at one time, thought badly of this case. The palpitations used to be distressing, and generally resulted from any imprudence in exertion or diet, and it was most quickly removed in the latter case by a warm aperient. In the latter part of the treatment, the Oxyde of Silver was tried; only one pill, about two hours before dinner. The benefit derived from it appeared to me very striking; and I think this remedy will be found a very valuable one in this class of cases, and whenever there is a compli-

cation of gastric irritation. It seems to possess considerable power in stilling the palpitations; and in irritative indigestion its powers are very great. It has also been used with success in eccentric Epilepsy, and still more in epileptiform attacks.

CASE XXVII.

September 12, 1835.—Miss B., ætat. 30. Dilatation of both right and left ventricle; the palpitations severe; surface of body cold and exsanguine, or rather livid; lips dark coloured, and face livid; the jugular veins much swollen; ancles swell even in the morning; breath very short on the slightest exertion; pulse 108; menstruation scanty, almost amounting to amenorrhœa; the bowels confined; and motions often light-coloured; lies best on right side; urine scanty, except after the palpitations, when it throws down a red sediment; stomach debilitated; flatulence, and sometimes acidity after eating. Had laboured under her present symptoms for ten years, but has got worse lately. A few mercurials to act on the liver, and warm purgatives afterwards. At night, sudorifics. Baths of Iodine, for feet and hips, three times a week. For the palpitations, which were very frequent, anti-spasmodics and sedatives; Valerian, Belladonna, and Æther. After a time, the hepatic secretion was much improved; the palpitations were controlled, and the pulse down to 90; the ancles no longer swelling, even in the evening. The first sound still like the second, and the dimensions of the heart much as we began, though its action was far more healthy than on the 7th of September. I now ordered Carbonas. Ferri. with R. Hyosc. m. xx. in each dose; Aloetic purges occasionally. This treatment was altered to a combination of Iron with Iodine and Aloetics, every five nights, before the period, and whenever costive. By a steady perseverance, the liver and kidneys acted well. The menses became free, and the skin resumed its healthy look and condition; and the heart's sounds were nearly normal. After ten months' treatment, I took my leave.

CASE XXVIII.

Mrs. G., ætat. 66.—This was an example of extreme Dilatation. Both right and left ventricle much dilated, the right especially;

the sound and dulness extended far to the right of, and high up, the sternum, also across the whole carotid of the chest; the jugular veins very large, and swelling and subsiding with the respiratory movements; the subclavian veins the same; the dyspnœa extreme, with cough and watery or mucous sputa; rhonchi all over the lungs; palpitations truly frightful, and every one threatened to terminate her existence. Signs of occasional cerebral congestion, also of dyspepsia; pulse small, feeble, and intermitting, hardly a regular beat to be felt; anasarca; has long been unable to lie down, but sits up constantly, leaning forwards. The very intelligent medical gentleman who had kindly attended her, for she was poor, had tried every remedy and mode of treatment he could think of. When first I saw her she had had no rest night or day, in consequence of the violent palpitations. Happening to be in consultation on another case, the medical gentleman asked me to visit her, and try to relieve her a little. I ordered an instantaneous blister, and Pulv. Fol. Digitalis gr. vj., to be sprinkled over the blistered surface. The application was extraordinarily beneficial. Ease in breathing succeeded for a considerable time. Warm purgatives, with diuretics, and stimulant tonics were given. Extreme as was this case, and little as was the hope, this person's life was preserved for more than a year, by obviating urgent symptoms, by persevering in the treatment here recommended, and by perfect rest and quietude.

At last, she died, from a return of symptoms, ending in Dropsy, &c.—The heart was found everywhere dilated, and the ventricles of very thin parietes; the right ventricle, auricle, and venæ cavæ, seemed to form one continuous canal of Dilatation; the Vena Cava Abdominalis being very nearly as large as the right auricle, and the Valvula Eustachii seemed to have disappeared. The tricuspid valve must have long been incompetent to perform its function. The congestion of both liver and kidneys was very great.

This case is a good illustration of death from Dilatation without valvular disease; and of the great benefit to be derived from the endermic application of Digitalis, when death seemed to be impending, and there was no time for trying other remedies.

CASE XXIX.

DILATATION WITH HYPERTROPHIC IMPULSE AND DROPSY.—
Martha S., ætat. 19. Has been in a London hospital, for Heart-disease and Dropsy, proceeding from Rheumatism. She got very wet at harvest, and rheumatic pains in various joints, with swelling, followed; then Dropsy. She had no Dropsy when she left the hospital, but the thoracic symptoms recurred, and then the Dropsy.

On the 22nd of May, she came as an out-patient. The urine scanty and high-coloured; there were still migratory pains in loins and chest; the latter running down the arms, and more violent on motion, so that she dare not wash her hands; cannot stoop, as it hurts her loins to stoop; urine scanty and high-coloured; great anasarca and the abdomen large, but no distinct ascites; as the abdominal cellular membrane was much infiltrated with the drop-sical fluid; feet not cold; headach; has menstruated only once since her illness; and they appeared two months ago. By auscultation, there was considerable Dilatation, especially of the right ventricle, rather a hypertrophic action of the left; the heart's action very hurried and even tumultuous; bellows-murmur with first sound; a pain under the left nipple; pulse 138. The heart seems organically enlarged; dyspncea and palpitations at times.

R. Submur. Hydrarg. gr. xij., Extr. Aconit. gr. ij., Extr. Hyosc. 3ss. ft., Pils two, Cap. j. nocte maneque. A mixture of Glauber's Salt, Carbonate of Soda, and R. Digitalis. A blister, and Ung. Sabinæ for the dressing.

On the 29th, the pulse was 98; no pain in side, and the urine increased in quantity, and of good colour and gravity. On June 12, she complained much of headach. I took her into the Infirmary on the 20th; the Dropsy was gone; but there was an irritable action in the heart, though the bellows-murmur was so slight as to be nearly inaudible; the pulse got up to 112. I thought it was better to watch her closely; so she became an in-patient. Pills of $2\frac{1}{2}$ grs., Pil. Hydr. $\frac{1}{6}$ gr. of Extr. Aconit., and some Extr. Col. C., were given; a diuretic mixture; and Iodine leg-baths were also ordered. The pulse was 84 in a week; she could not continue the Iodine baths; they made her feel very queer, she said. On the 18th of July, she was discharged in good health; the heart of

normal dimensions and action; and able to do her work. The Aconite here answered well. If this was a case of mere functional derangement, it certainly closely simulated organic disease.

CASE XXX.

November 23, 1837.—Sarah D., ætat. 10. Has been ill since August last; had been gleaning; got very wet, and caught cold; had pains (rheumatic); still pains in loins and chest; cannot stoop, as it hurts the loins; great pain from heart, shooting down the arms, increased by motion; so that she dare not wash her hands even; lips dark red, and face characteristic of heart-disease; pulse weak and 126; cannot lie down to sleep, and awakes in fright; the action of the heart is quite tumultuous and fluctuating, and the sounds are those of great Dilatation; urine scanty; bowels confined; feet and skin cold; and œdema of legs. Occasional palpitations, and constant dyspnœa. Iodine warm baths to knees and legs, alternate days. A mixture of Sp. Æther. Nitr.; Syr. Papav. Alb. R. Digital.; and at night, a grain of Calomel, with three grains of Pulv. Ipecac. Comp.

This treatment was successful; through stimulating the kidneys, liver, and skin; and within a week, she could lie down with great ease. On the 20th of December, a bitter tonic, with alkalines, aperients, and ammonia; and by the 28th, she was discharged in good health; but to continue her tonics, &c., some time longer.

CASE XXXI.

George W., December 14, 1837, ætat. 33. Pain in sternum and epigastrium; increased on pressing the epigastrium upwards; dry cough; little or no cardiac impulse; urine normal; tongue clean; pulse 92; great dyspnœa; respiratory murmur natural; signs of Dilatation of the heart, but not to a great extent; universal anasarca; the penis much swollen from the fluid; also the face. Here there seemed no disease of kidney nor of the liver; but I attributed the anasarca to a cold, lately caught, and to the coexisting heart-affection.

R. Chlorid. Hydrarg. grs. vj.	} Misce ut fiant Pilul. vj. secundum artem. Una ter quotidie sumenda.
Elaterii. gr. j.	

The next day, the Dropsy began to lessen; and, by the 24th, he was everywhere of the proper size, excepting only the legs.

By January 11, he was discharged, cured, though there were still signs of a dilated heart; but he would not stay any longer for treatment, which, indeed, seemed hardly necessary. I do not think his Dilatation increased so as to interfere with his daily labour, or I should have probably had him under my care.

CHAPTER VII.

DISEASES OF VALVES.

THESE may be said to be always organic, and are now usually divided into the obstructive, where there is a narrowing of the orifice, forming an obstruction to the blood in its onward course through the valve;—and into the regurgitant, where the valves do not close the orifice, and thus allow the blood to take a retrograde course.

Rheumatic Endocarditis is a common cause; and the way in which the excess of fibrine is deposited on and under the serous surface of the valve, has been already alluded to. With this deposition there is more or less of subacute inflammation; and thus the valves may be tied up in various ways, besides being liable to rupture from their own action.

This subserous coat, thickening of fibre, and deposition on the free surface, cause an elongation of fibre, an impaired elasticity, and a disposition to contract at one time, and to elongate at another; producing great irregularity in the apparatus and in the functional performance of the valves. Hence the great danger of palpitation, for the elongated fibre may,

and often does break, and great distress will result, together with a great extension of the disease. We shall see this exemplified in case T. H., where disregard of counsel caused palpitation, exacerbation of symptoms, and death to ensue in a short time.

Another cause is the formation of ossific deposits most frequently on the aortic valves; thus arises obstructive disease. Ossific matter may so form as to close or nearly close the orifice; which opening, (the circumference of which ought to be two inches five lines,) may be so narrowed as to admit only a tube of the size of a crow-quill.

The laminae of the mitral valve have been found so adherent as to reduce the orifice (the medium normal circumference of which, is three inches and a third) to seven lines; whence obstruction to the natural course of the blood must arise, and regurgitation follow.

Another sort of thickening is mentioned having a disposition to ulceration; it affects the aortic valves, and is the result of a degree of acute inflammation. Persons addicted to habits of intoxication are disposed to it. The valve is found broken down, leaving only a rim, or a sort of cord, across the orifice of the artery.

Lastly, there may be a shortening or atrophy of the substance of the valves.

The obstructive diseases arise from several causes. When the mitral valve is affected with cartilaginous deposits, it is generally contracted and the free margin thickened. The opening is converted into a circular or oval form, and it is so small as to admit

nothing larger than a writing pen. The indurated margin may be two or three lines in thickness.

There may be also a calcareous deposit, affecting the fibrous base of the valve; but leaving the margins so far unobstructed as to prevent the reflux of the blood.

The aortic valves may become indurated also; and more so at the base than at the free margins; but ossification of these valves is more frequently occurring than of the mitral; and the ossific matter may be deposited on the Corpora Sesamoidea, which may become much larger, and of a size varying from that of a pea to that of a pigeon's egg, according to the experience of Bouillaud and Bertin. The ossific matter may be found also on the base of the aortic valves, leaving their margins free—when the circulation will be but little impeded; but when the margins are involved, they become fixed together, or their edges may be turned either way—into the aorta or backwards into the ventricle. In the first case, the valves, though fixed, allow the blood to pass pretty freely, but regurgitation is not prevented; in the second, the passage of the blood meets with very great difficulty.

Instead of ossific matter we may have steatomatous deposit, which will thicken the valves, and often lead to the rupture of them.

Besides these deposits, we meet with vegetations or excrescences on the valves; and they will cause narrowing of the opening, and sometimes allow of regurgitation.

The regurgitant diseases are caused, as the ob-

structive are, by fibro-cartilaginous, or calcareous, or osseous deposits; but besides affecting the bases, they must also render rigid the free margins of the valves—for if the central margins be sound, regurgitation is prevented. A rupture of any part of the valves, or a narrowing of the *Cordæ Tendineæ*, will give rise to regurgitation.

Regurgitation causes Hypertrophy of the cavity unprotected by its valve.

Where Valvular Disease exists, the obstruction causes increased action to be set up in the propelling cavity behind the obstruction;—hence Hypertrophy results, and if the Hypertrophy were only sufficient to overcome the increased resistance, it would be beneficial; but soon the increased size and power of the muscular fibres cause increase of action, till it becomes a great evil; and requires much careful treatment to reduce it, yet not reduce it too much. If the regurgitation or obstruction is so great as to overpower the resistance and to cause Dilatation instead of Hypertrophy, the prognosis of the case is very bad indeed. Usually there is a mixture of both, and the mode in which they are produced must be manifest—for the obstructed or regurgitated blood will distend the walls of the ventricle, until they are roused to extraordinary action; but, if the pressure be too great, or the walls themselves too weak, they give way, and Dilatation alone ensues, and the circulation of the blood is performed with the greatest difficulty, in extreme cases.—See Case of T. C., Esq., and observations preceding it.

The left side of the heart is more disposed to these diseases than the right; and the reason why it should be so has been already alluded to.

DIAGNOSIS.

Objections, both as to the possibility and utility of accuracy of this diagnosis have been made by several writers. Bouillaud says, it is more curious than useful to know which valve is affected; while others deny the possibility altogether. Now, as to the possibility, that has become a question of fact,—for a sufficient amount of clinical experience has now been accumulated to answer in the affirmative; and, we may safely add, there are few practitioners possessing much experience in auscultation, who in tolerably *clear cases*, will fail to point out the valve or orifice affected. But one must not deny, that there may be complicated or masked cases, in which great difficulty may exist as to diagnosis,—such cases should, however, be taken as exceptions.

With respect to the utility, it ought to suffice to answer, that accuracy, whenever attainable, ought to be prized for itself; leaving the *cui bono* to be discovered afterwards. Such discovery of practical advantages is mostly sooner or later made. Facts apparently isolated, or without connexion with each other, are first made known,—it may be one by one, until the time arrives when one throws light on another, or each on all; the whole are grouped together and practically applied. So it has been in the present instance; still the objectors say, what matters it, whether one valve or another be diseased—the result is the same, and so is the practice. But herein lies the error; as will be seen exemplified in the remarks made on the use of *Digitalis* in former

pages—which remarks have been the fruit of slowly-made clinical discoveries of practical men. If the result, as far as cure is concerned, be ultimately the same (and that has been denied); yet it is a great point gained to avoid experimenting on our patients and to know when a remedy is likely to be prejudicial or when beneficial; to know, also, that we may give great relief to our patient and to prolong life, by a judicious adaptation of our remedies to the state of our patient.

It is now generally agreed, that it is of great importance both to know which valve is affected and, also, whether the disease be of the obstructive or regurgitant kind.

As the best summary of objections made to accuracy of diagnosis in these diseases, the following observations of Professor Forget, lately published in the "Medico-Chirurgical Review" deserve attention, though we dissent from many of his conclusions.

"This is certain; whenever the valves become altered or diseased, a sensible change in the tic-tac sounds of the heart is invariably to be perceived.

"From their community of origin, it is not possible, practically to discuss separately and apart from each other, the subjects of valvular contraction and valvular insufficiency, and therefore it is more logical to take for our basis of clinical inquiries valvular alterations in general, as constituting the fundamental element of organic diseases of the heart. These alterations are, in the immense majority of instances, the starting point and direct cause of Cardiac Dilatation and Hypertrophy.

"Of twenty-nine cases of Valvular Disease ex-

amined by dissection; in nine, the Aortic valves were affected alone; in ten, the Mitral valve; and in the remaining ten, both valves were diseased. Only on one occasion was the Tricuspid affected; the Pulmonic never.

“We may conclude, that lesions of cardiac orifices are multiple; and that, as these lesions give rise to analogous symptoms, whatever be the orifice affected the diagnosis of the exact seat of the alteration during life, is often very difficult, if at all possible; in practice it is fortunately not of much importance to diagnosticate the precise nature and seat of the Valvular Disease.

“The essential point to determine is, whether there be such a disease existing or not. If there be, we may rest assured that it is in the less or systemic cavities; but whether it be the Aortic, or the Mitral valve that is affected, it is never easy to say. There has been no little parade of scientific and technical discrimination very needlessly expended, in attempting to point out the diagnostic symptoms of different cardiac diseases. Be it remembered, that the Aortic is not distant from the Mitral valve more than by a rim a few lines in breadth. How then can we believe that their diseases will be marked by any very distinguishing symptoms?

“The characteristic *bruits* are sometimes absent in some cases of confirmed Valvular Disease. This is sometimes owing to the inexperience of the auscultator; but other causes may satisfactorily account for this circumstance, as, the pulmonary murmur may be so loud as to mask the cardiac *bruits*; in the same way as an intervening portion of lung between

heart and ribs may deprive the cardiac region of its usual dulness on percussion. Another cause may be the abnormal degree or amount of force in the heart's contractions. If this force be excessive there is almost necessarily such a tumultuous confusion present, that the characteristic sounds are quite *dénaturés*; if it be deficient the sounds are scarcely if at all produced; in like manner the valves cease to vibrate, as the cords of a violin remain quiescent if too lightly touched with the bow. This is often observed in the last stage of Cardiac Disease, where great debility is present.

“ But it has been objected against accuracy of diagnosis being probable, that the *bruits* do not sometimes correspond with the character of the lesion. Now it is difficult to explain how or why the morbid sounds vary their character from day to day. What has been said above will help to explain—for just as the excess or deficiency of contracting power in the ventricular paries will account for the nonproduction of the special sounds, may not the same causes explain the irregularity of their relative strength and weakness under certain conditions of the circulation? Suppose a case of contraction with insufficiency of the Aortic Valves, the left ventricle can contract only imperfectly, while there is no impediment to its free dilatation; then the first sound will probably be absent, and the second only be perceived. Moreover, let an ambiguous case be watched, and the characteristic auscultatory signs will be recognised some day—the peculiar sound may have been heard yesterday, or will to-morrow, and so on. The state of the valve, too, requires

notice—for a slackened cord will not vibrate like a tense one.

“The Humorists may invoke the crasis of the blood, and the Vitalists the contractility of the vessels, to account for some of the acoustic phenomena of the heart's action; but if they be correct, are these not physical circumstances? We do not assert that valvular thickening is the only and exclusive cause of abnormal cardiac sounds, but we do assert, that it is the most common cause of them; and if we cannot occasionally explain the phenomena, it is better to charge it to our insufficient means of exploration than to the inconsequence of Nature's acts and operations: ‘*Physica, physicé, explicanda.*’”

Much discussion has prevailed as to the manner in which the valvular deposits are formed. Bertin and Bouillaud refer exclusively to inflammation, Laennec talks of a peculiar organisation of concretions; but, is not a Humorist solution of the difficulty the most probable?

We find Valvular Disease to succeed an attack of Rheumatic fever in perhaps nine cases out of ten, and we know that the blood in that disease abounds in fibrine; which, it is natural to suppose, is always ready to be deposited on various points of the ventricle or its valves. In addition, we have only to admit the very probable supposition, that such a crasis of the blood must be abnormally stimulating to the Endocardium; whence would arise an irritative or sub-inflammatory action; and a rational theory of causation is at once formed.

The general symptoms are those which result from obstructed circulation, and are like those arising from extreme dilatation of the heart. The pulmonary congestion is shown in cough; thin watery sputa; dyspnœa; orthopnœa; frightful dreams; sudden startings out of sleep; and these symptoms are often observed early when the Mitral Valve is much obstructed. The causes of this are to be found in this lesion sooner affecting the lungs than some others; and in the fact, that during sleep the voluntary muscles are not exerted, the lungs are not fully expanded, insufficient arterialisation of the blood, and congestion ensue; the patient suddenly starts from sleep in terror, from the previous uneasy sensations; œdema pulmonum, with its crepitous rale; hæmoptysis. There is turgescence of the jugular veins; livid face; anasarca from obstructed capillaries; congestion of the brain may attend; even apoplexy and palsy. Hepatic disorder also, with its various symptoms, and following ascites.

The pulse varies much; it is very peculiar, almost a diagnostic in disease of the Mitral Valve, being small, weak, intermittent, and singularly irregular. It is eminently a fluctuating pulse, one rather full beat, or rather undulation; then a smaller, and then several quick beats together; but the late Dr. Hope says, if the circumference of the auriculo-ventricular orifice is not diminished more than an inch, or when the aperture for regurgitation is larger than a goose quill, the pulse may be only weak and unequal, except on any exertion.

A similar kind of pulse may occur in other diseases, it is said, though I have never met with it,

as in softening of the heart; but the absence of valvular murmurs will distinguish. Also in Pericarditis, with copious effusion compressing the heart; and in Endocarditis, causing polypi in the heart; but in such cases we shall have the symptoms of the diseases mentioned, and they will invade suddenly, not come on slowly, as in Valvular Disease. Such a pulse, it has been said, might be caused by dyspepsia, by nervousness, bilious disorder, and by gout, when the irregularity of the pulse will be only temporary or occasional, and the valvular murmurs will be absent.

In great contraction of the Aortic Valves the pulse is small, weak, intermittent, and irregular; but in slight degrees of contraction the pulse will be but little affected.

Pain, even so intense as to simulate Gastritis, has been felt in the Præcordia, with a numbing pain extending down the left arm to the elbow.

The physical signs often give us the most unequivocal indications of the site of the disease; but we must first ascertain that the heart preserves its normal situation in the thorax, or we shall never be able to establish a special diagnosis; and we must also recollect what has been written in the Chapter on Diagnosis, with respect to the first and second sounds, and the flow of blood into or out of a ventricle.

Obstructive Disease of the Aortic Valves will be shown by a superficial bellows-murmur, or a grating or sawing, heard with the first sound, about the middle of the sternum, opposite to, or a little above, the lower margin of the left third costal cartilage.

When the heart lies deep, or it is covered by sound lung, the sound will be heard higher up, even in the carotid arteries. If it is not accompanied by regurgitant disease, the second sound is said to be less clear than usual, implying a thickening of the base of the valves, and diminished freedom of action. The distinguishing character of this abnormal sound is, that it is heard above, in the direction of the carotid arteries, where sounds from the other valves can scarcely reach.

Regurgitant Disease of the Aortic Valves is distinguished by a murmur with the second sound, and is best heard at top of the sternum, and can be traced upwards towards the carotid arteries. The second sound of the pulmonary, or right semilunar valves may be mistaken for this sound; but it cannot be traced up the Aorta, nor is it so loud or grating a murmur as when the left semilunar valves are affected.

When obstructive and regurgitant disease co-exist, there will be a double sawing-murmur at the places above-mentioned.

The pulse is characteristic, for obstructive disease alone is accompanied by a hard jarring pulse; but in severe regurgitant disease, the arteries fill and seem immediately to collapse; the reason of which is evident in the want of support to the column of blood, from the imperfect valves and the permitted reflux of the blood. Dr. Corrigan tells us, that the arteries seem visibly to pulsate, and appear even locomotive; they are like tortuous lines, wriggling under the skin in extreme cases, and in old men, they are probably deficient in lateral elasticity, and thus can only be elongated in a tortuous line.

This visible, or moving pulsation of the arteries has, in its extreme degrees, been considered pathognomonic of regurgitant disease of the Aortic Valves; in slight degrees, it may occur after severe depletion, or after exhaustion in a debilitated frame; but in the extreme degree, it is not likely to be mistaken. A vibratory pulsation can also be felt, and the more sensibly the more we approach the Aorta; but M. Pigeaux tells us, a similar pulse is observed in Hysteria, Chlorosis, and Hypochondriasis. Perhaps, the most distinctive mark of regurgitation, as regards the pulse, is an instantaneous sinking of the artery under the finger, immediately following the systolic action, and this sinking will be more or less marked with the degree of regurgitation allowed. Dr. Henderson has remarked, that in this disease, the radial pulse follows that of the heart by an interval longer than usual.

Palpitations, orthopnoea, cough and expectoration, hæmoptysis and dropsical effusions, all attend this disease; for, although the interruption to the pulmonary and venous circulation, is an earlier consequence of Mitral Valve Disease than of Aortic—yet ultimately the consequences are, in this respect, the same; only in Aortic Disease, there is a greater failure of the capillary circulation, from the impaired tension of the arteries; regurgitant lesion of the semilunar Aortic Valves is attended with pallidity, and, in severe cases, with a puffiness of the integuments; while in Mitral Disease, there is more blueness and colour, from the greater predominance of venous congestion. In Aortic Disease, there is a restless irritability; in Mitral Valve Disease, there is often more

torpor or dulness. These distinctions are, however, far from being invariable.

The dyspnœa and palpitations are so severe as to simulate the paroxysms of Asthma; and a late author has described them under the title of Asthma from Disease of the Heart; but surely, the word Asthma is misapplied in such a case; for, under that term, we recognise a peculiar paroxysmal disorder, the symptoms of which are well known to the profession, and depend on a spasm of the muscular fibres of the bronchial tubes, quite independent of any cardiac affection, and indeed of organic disease in the chest.

When the regurgitation is extremely free, it has been said to have increased the force of the diastolic collapse so much as to make it resemble a second impulse.

Obstructive disease of the Mitral Valve, unaccompanied by regurgitation, is rare; this would cause a murmur with the second sound, and might be mistaken for regurgitant Aortic Valves, only that it is best heard at the apex of the heart, and cannot be heard in the carotid arteries.

Regurgitation through the Mitral Valve, is shown by a murmur with the impulse and first sound, heard at the apex. Here it can be heard; and it sometimes drowns the first sound; and while we hear this, we can also hear the natural double sound at the upper part of the sternum, and in the large carotid arteries. But a combination of obstructed Aortic Valves and regurgitant Mitral, would be of very difficult diagnosis.

Dyspnœa and hepatic disorder are the first symptoms of affections of the Mitral Valve; for the ob-

struction to the circulation causes congestion in the lungs, and, after a short time, in the liver; the reason of which is obvious. In case T. H., dyspnœa was for many months the sole symptom; and, ultimately, the liver was very much enlarged.

In diseases of the Tricuspid Valve, we must not expect such decided murmurs, as when the other valves are diseased. Regurgitation through this valve is not uncommon; it is known by pulsatory swelling of the jugular veins, and it is attended by no audible murmur. This may be accounted for by the fact, that the laminae of the right ventricle are less powerful than those of the left; John Hunter says; "The valves of the right side of the heart do not do their duty so well as those of the left." And Harvey writes: "*Istæ Valvulae Mitrales mole et robore et exactâ clausurâ, illas in dextro positas exuperant.*" And the late Mr. King, in an Essay on the Safety Valve Function of the Right Ventricle of the Human Heart, shows how very common regurgitation must be in that valve, and the protection to life thence derivable. He writes thus: "The Tricuspid Valve, naturally weak and imperfect, closes less and less accurately, according to the increasing degrees of the ventricular distention." But for this facility of reflux, life would, in some cases, be soon extinguished. The venous system is much exposed to sudden repletion, which, but for this reflux, might occasion a paralysing congestion and fatal distention. Fluids and chyle are suddenly poured into the veins in large quantities; and, again, fluids have been absorbed from the stomach in great abundance. Muscular action; extreme cold, and disturbed respiration, may all cause distention of the right ventricle,

and the three causes may be combined: namely, sudden repletion, exertion, and exposure to cold; when, if the Tricuspid Valve always accurately closed the aperture, and would not yield, death might ensue.

In pathology we sometimes meet with cases, where the right ventricle, right auricle, and Venæ Cavæ seem to form one continuous almost equally dilated canal.

The sign of narrowing or obstruction of this valve, would be a filing or deep blowing sound, replacing the second, or diastolic sound; and heard most distinctly under the sternum, on a line with the juncture of the fourth rib. If the disease admit of regurgitation, then the sound is heard at the same site; but replacing the first sound, and there will be pulsation in the jugular veins.

Thus then, a murmur synchronous with the first sound indicates either an obstruction or narrowing of the arterial valves, or regurgitation through the auriculo-ventricular openings; and a murmur or morbid sound, which accompanies or suppresses the second sound, will indicate either a narrowing or obstruction of the auriculo-ventricular valves, or a regurgitation through the semilunar valves. To complete our physical diagnosis, we have to trace the direction of the sounds; we must observe the character of the sounds, whether rough or smooth, and we must take into consideration the pulse and general signs.

The attrition-murmurs of Pericarditis might be mistaken for Valvular murmurs, but for the diagnosis.—See PERICARDITIS.

PROGNOSIS.

No rational practitioner can expect to remove the structural disease; and it will be but candid to tell our patients not to hope for a radical cure; but having done so, we can truthfully assure them that great palliation of symptoms, and considerable prolongation of life, are mostly attainable by judicious and persevering treatment. If the disease have existed for some time, our prognosis will be more favourable than if it were to set in suddenly; because in the former case, the constitution has had time to bear the strain upon it, and suffers not from a sudden shock—this was exemplified in case T. H. The disease commenced, doubtless, when he first complained of dyspnœa; but he never sought advice till he had suffered a paroxysm, which arose out of several causes and physical exertion combined; soon afterwards, another violent one occurred, which was nearly fatal at the time; dropsical effusion supervened, and the exertion of going up-stairs suddenly terminated his life.

Another ground of prognosis is, whether the great secernent organs are free from disease. Upon them will fall the burden of what may be called vicarious action.

The liver is more or less congested in all long-standing diseases of the heart; but until it has become greatly diseased in structure, it may be made the means of delaying the progress of the disease. So it is with respect to the kidneys, skin, and the

mucous membranes; but let them fail, one or more, and death must soon follow.

The amount of the lesion must also be taken into consideration, and the ravages made in the constitution by it. In ascertaining the former, we concur with M. Martin Solon, that the character of the abnormal murmur points out in a measure, the degree of danger. A bellows-murmur indicates a less grave lesion than does the rasp or saw sound, and there is more danger if the healthy sound is totally replaced by the abnormal murmur than if it can be heard.

As to the ravages made by, or the consequences of, the disease, it has been truly said, that the longer the disease has been going on, the more the system accommodates itself to the obstruction and the less alarming will be the ravages; but if there is much general weakness, much general venous or capillary congestion, with coldness of extremities and dropsical effusions which will not yield to remedies, a fatal result may soon be expected—urgent symptoms may be removed more than once, and considerable amendment follow; but the distress will return sooner or later, in severe cases. Youthful persons of robust habits, thus affected, after the first attack, may enjoy much comfort for a considerable time; but patients of debilitated habits, and who have suffered more than one severe attack, with a dropsical effusion, will soon experience a return, and must not expect that the fatal moment can be long staved off.

The consequences which Heart-disease produces, more or less quickly according to circumstances,

are inflammation of various organs, supervening on previous congestion, which congestion disposes the organs to be readily acted on by exciting causes. The local congestion may and will ultimately produce congestion of various organs, and disease of structure follows, and soon proves fatal—thus we find, post mortem, the liver and kidneys, one or both, much diseased.

Our prognosis must in a measure be guided by the probability of the patient's avoiding all undue muscular exertion. It is usual with medical men to cause great alarm, and indeed misery in their patients, by talking of the probability of their suddenly falling down dead; but we ought not to do so, for the suddenness of death generally, excepting in the most severe cases, depends on some prohibited exertion having been made;—as may be seen in most of the instances of persons afflicted with heart-disease, who have died suddenly. Therefore no part of the treatment requires more attention than does that involving the avoidance of all intense moral emotions, and of all great and of even slight physical exertions. They all act by inducing palpitation; and the way in which muscular exertion may cause death is shown in the Chapter on Dilatation, page 97. Palpitation may be fatal by the induction of a tonic spasm, or by causing the rupture of some additional portion of the affected valves, and an inflammatory glueing up of the valve to almost its total occlusion.

Of all lesions, the most fatal is an obstruction of the Aortic Valves, with dilatation of the left ventricle,—for the obvious reason, that increased, rather

than diminished action, is required to overcome the obstruction, or to delay its bad consequences. Next to this in fatality, is disease of the Mitral Valve; which, if of rapid formation, and still more, if at the same time complicated with disease of the excrement organs, will very soon terminate life.

Slight disease of Aortic Valves will occasion little distress; but extensive disease is formidable, and is one of the most fatal forms. One author has witnessed a fatal termination in three weeks after the first complaint of symptoms referred to the heart. It is probable in this form, as in other forms of Heart-disease, that the disorder had begun long before medical aid was sought, except in the case of Endocarditis. Morgagni, Senac, and Corvisart have all remarked the slow invasion of disease in this complaint; and they assert that we shall mostly be able to trace back the commencement of disease to the time, when Rheumatism or Gout or other cause had been in existence.

The prognosis then must be guided by the various complications—by the rapid or slow march of the consequent trouble in the circulatory system—by the temperament;—by the sex, as the progress is slower in the female than in the male, especially after menstruation has ceased;—by the age, for the older the patient, the greater chance of a slow progress in the symptoms—by the pecuniary circumstances of the patient, for one may be able to rest, and so avoid the operation of almost all the usual exciting causes, while another must exert himself in labour for his maintenance. The complication of Dilatation, we have said, renders the prognosis more

gloomy—and, lastly, treatment will modify both the severity and the progress of the bad symptoms, so that the anatomical lesion may be almost identical; yet the march of symptoms, and duration of the complaint, may be as dissimilar as possible.

The utmost caution must be exhibited in giving an opinion as to the prolongation of life; for as the late Dr. Hope has written: "We have several times known patients with a moderate, even with a rather considerable valvular obstruction, attain the age of 60, 70, and even 80, though the symptoms, from their account, had commenced in early life. On the other hand, if precautionary measures be neglected and Hypertrophy or Dilatation be produced, there is no organic disease of the heart, except adhesion of the Pericardium, which tends more rapidly to a fatal termination."

TREATMENT OF VALVULAR DISEASE.

It has been remarked that we must not expect to remove the lesion of structure; and this is the belief current with English medical practitioners. M. Pigeaux tells us there may be an exception, and that where syphilis has been the cause of valvular deposits, we may hope that they will be removed by an antisyphilitic treatment. But the diagnosis must be uncertain, and he gives no cases to substantiate his opinion; which theoretically seems plausible enough.

If then we must give up the hope of cure, the prevention of these deposits becomes of immeasur-

able importance; for when we reflect, that in a vast majority of cases the origin of the mischief is to be found in Rheumatism; that an attack of Rheumatism may be experienced at a very early age, and that such patient may, for the rest of his life—nearly a whole life, be subject to the miseries described in the foregoing pages, or be cut off by an early death; what a boon does prophylaxis become.

Dr. Hope comprehended the exciting causes of Valvular Disorder under two heads; overtension of the valves by the force of the circulation; and secondly, inflammation, generally of the chronic kind. And he continues: "If it were possible to ascertain that these causes were in operation before they had actually occasioned an organic change, it would most probably be possible, in most cases, at least, to counteract their effects, and to prevent the formation of the disease. But unfortunately there are no positive signs of the latent mischief, but what result from the disease already formed; from the obstruction itself; and in the present state of our knowledge we are not acquainted with any means of removing Valvular obstruction."

We now know from accumulated experience, that Endocarditis is a fertile source of Valvular mischief; and that in that disease there are causes in operation which powerfully favour deposition on the Endocardium; viz., an inflammatory action of the membrane itself, and an excess of fibrine in the blood; to which I would ask permission to add, a peculiar abnormal change in the components of the blood itself. As I have already alluded to this subject, I need say no more at present, than that a

combination of antiphlogistic treatment, with alkalis, will prevent all deposition. In all cases, the antiphlogistic remedies must be proportioned to the activity of the inflammatory symptoms; and mercury is also an indispensable adjunct, for we now believe that mercury, besides being antiphlogistic, has a tendency to reduce the excess of fibrine—to thin the blood;—but it will not relieve the chemical change, Alkali will alone do that, according to my experience; and very glad shall I be if my medical brethren will fairly try it. The benefit which will accrue must soon convince; and, besides, the treatment customary with the profession in Endocarditis need not be materially changed. The single addition of Alkali to the other remedies is all I would contend for, while nothing is risked by the omission of those remedies, which may have been hitherto deemed indispensable.

The disease being formed; and all hope of removing the deposit being abandoned; our indications are, the avoidance of all exacerbating causes,—the prevention of increase of development,—from fresh inflammatory attacks, from muscular exertions, and, above all, from palpitation—the palliation of symptoms,—and lastly, the removal of urgent symptoms.

The avoidance of exacerbating causes need not be entered into in detail; nor need we say more than to recommend the rigorous quietude of mind and rest of body, which, of themselves, will do much towards considerable prolongation of life in persons affected with considerable structural lesion.

As to the second indication, we know that the

lesion forms a mechanical obstruction to the course of the circulation; and that the cavity behind the obstruction becomes either hypertrophied or dilated. We have, therefore, to watch the Hypertrophy, which is an effort of nature; so that, on the one hand, it may not in itself become a source of disease, or that, on the other, it be not reduced so low as to take away the necessary extra-propelling power. In the event of Dilatation, our treatment is to give as much power to the ventricle as we can. In both cases, our first object is to keep down the quantity of the blood—yet *without lowering the vital powers*. When Hypertrophy is present, a small venesection, or an occasional cupping may be necessary; not to relieve any temporary paroxysm of dyspnœa or palpitation, but to lessen the mass of blood. Even this must be done with caution, and rarely. Besides this, we resort to other means which are also adapted to the complication of Dilatation. They are such as will elicit and maintain a free action of the liver, and we must secure also, a full performance of the cutaneous functions, which is important as being highly derivative. The diet must be adapted so as to prevent too rapid a sanguification or the induction of a plethoric state; while it must be more or less stimulating as we meet with the predominance of Hypertrophy or of Dilatation.

Keeping the bowels in as free action as may be compatible with some comfort, will obviate plethora more than any other single means; but purgatives of the saline class are counterindicated by Dilatation.

The complication of Dilatation with Valvular Disease is of very difficult treatment, and forms our

very worst cases. Here the regurgitated and re-fluent blood instead of exciting the ventricle to contract, extends it more and more, till it has become largely dilated and utterly incompetent to forward each wave of blood on its course. We must seek to impart additional strength to the ventricle; and if the system be in an anæmic state, we must give chalybeates and tonics, combined with diuretics and an occasional cholagogue purgative. The skin must be stimulated by warm baths, salt water baths, iodine baths, and baths medicated with bay salt. By such united means much stress is taken off the affected organ; and as little blood is allowed to be sent into the heart from the veins as is possible; thus the duty of the ventricle is considerably lightened.

In this form of the disease I would recommend the strychnine; which, when properly adapted to the case, may prove an useful auxiliary;—for a time, at all events. I have used it in the form of acetate, and have given it in doses of one-sixth of a grain, three times daily, till some *slight* signs of its influence became apparent.

One would hardly expect much from its use in diseases of an organ supplied with nervous influence from the organic system of nerves; since it has hitherto caused twitchings, and seemed to act on the voluntary muscles only. Nevertheless, this remedy is well worth trial.

Mercurials will often be required to promote the action of the absorbents, and to remove congestion after palpitation.

Between the two complications of Valvular Dis-

ease, with Hypertrophy alone, or with Dilatation alone, there may be many intermediate states, and our treatment must be adapted to the predominance of the one state over the other.

The treatment of all Valvular Disease has been hitherto considered, excepting by a very few practitioners, without reference to the site—to the valve diseased; yet in obstruction of the Mitral Valve our practice ought to differ materially from that pursued in Aortic Valve Disease. Indeed the indications are almost diametrically opposed; for in the former the hypertrophic action of the right ventricle requires to be reduced as quickly and completely as possible; or else the congestion of the lungs, which is a first and immediate effect, when combined with the powerful propulsion of the right ventricle, will give rise to a dangerous hæmoptysis, though itself an effort of nature to save life. Hence the necessity of blood-letting, proportioned to the danger and the sthenic habit of the patient; hence the value of *Digitalis*, *Colchicum*, &c. In Aortic Disease with Hypertrophy, we must not reduce the hypertrophic impulse too much, for it is necessary to overcome the abnormal resistance caused by the obstruction. Here *Digitalis* is decidedly prejudicial; and the reasons have been adduced at page 27. Indeed, careful attention and much judgment are here necessary in the use of sedatives, lest the extra labour of the left ventricle be reduced so far that the requisite counterpoise to the obstruction be taken away, and the capillary circulation soon fail. What sedatives have to effect, is to prevent palpitation,

which is always prejudicial; and the sedatives applicable to all forms of Cardiac Disease are Aconite, Belladonna, Hydrocyanic Acid, Oxyde of Silver, &c., &c. Digitalis should be excluded, except in disease of the Mitral Valve, and where diuresis may be wanted; and it must then be combined in a particular manner.—See DROPSY.

As these two forms of Valvular Disease progress, or as their later stages come on, a state, similar in some respects, prevails in both; yet the treatment differs even then as it did in the early periods. In Mitral Disease, the first result is pulmonary congestion; in a short time, perhaps, the right cardiac cavities become congested;—then the large veins;—until the congestion of the capillaries, both of the internal organs and of the periphery becomes observable. So it will be sooner or later in Aortic Disease, but the congestion is accompanied almost from the very first, with a want of tone in the capillaries themselves; whereas in Mitral Disease, the congestion is the effect of venous fulness alone. Hence the practical management differs; in Aortic Disease we must be very cautious in ordering detractions of blood; we must keep up a certain amount of propulsive power in the left cardiac ventricle, and we must supply as much tone as may be possible to the capillaries themselves, by tonics, special, general, and local; saltwater baths, Iodine baths, &c.; stimulants, excernents, and tonics, in various proportions, according to the peculiarities of each case. In the congestion of the Mitral Valve, we have usually more tone to reckon upon, in help of our treatment; detrac-

tions of blood, purgatives, mercurials, hydragogue purgatives, as *Elatarium*, may be more boldly administered.

All intercurrent inflammatory attacks must be put down immediately, by the usual treatment—bloodletting sparingly; leeches; cupping; blisters; calomel, antimony, and opium;—for any additional inflammation becomes extremely dangerous. And another chief point to be looked to, in the second indication, is the prevention of palpitation, which is a frequent and distressing attendant, and may be fatal, either during the paroxysm, by straining or irritating the diseased structure; or by inducing visceral congestion—for visceral congestion will follow, in greater or less degree, every paroxysm, and it then reacts upon, and increases the bad consequences of the original disease.

The various modes of removing palpitation have been described in the chapter on Dilatation, and need not be repeated. Having succeeded in doing this, we must guard against, as well as remove the local congestions, which seldom fail to follow severe paroxysms of palpitation. Another danger to be apprehended, is the sudden extension of the disease; for it may then be rapidly fatal. The best remedy in either case is calomel, a few doses of which, variously combined, should be given every night and morning, for a few successive days; cupping and leeching may also be required, also counter-irritation.

The exciting causes should be most vigilantly guarded against. Any irritation conveyed by the afferent nerves to the spinal cord, may occasion a

speedy paroxysm, through the agency of the reflex function, and must be treated according to the nature of the irritating cause. Indigestion is, perhaps, the most frequent of all causes; flatulency, acid in the stomach from some undigested food, &c. Here the Oxyde of Silver will prove very efficient, both as a sedative, and as a remedy for the indigestion, which is invariably of an irritable character. As a preventive, a single pill daily, an hour or two before dinner will at times succeed. Alkalies may be given also.

Truly has Dr. Hope remarked, that the disease is not to be cured by removing the paroxysm, but by preventing it, since every attack gives the patient much ground to retrace; and a single attack may undo the progress of a year, and death may result from the indiscretion of a day. The danger of such indiscretion is much increased when the patient's feelings are easy, as he can hardly be made to comprehend the necessity for his rigid adherence to medical, regimenal, and dietetic discipline.

The summary of the various remedies to be employed in Valvular Disease are detractions of blood, purgatives, mercurials, diuretics, sedatives, expectorants, emetics, sudorifics, alkalies, tonics; while, externally, setons, issues, blisters, punctures, baths, are at different times necessary.

Bloodletting.—The utmost discernment and experience are requisite in ordering venesection, as may be gathered from the remarks on the treatment of the different diseased valves. It should never be directed, except to keep in check extreme hypertrophic action, palpitation, and dyspnœa, or to reduce

the temporary local fulness, then four, six, or eight ounces of blood may be abstracted. The palpitation can generally be removed without loss of blood, unless it depend on fulness ; in any other case, loss of blood will probably increase the palpitation. If much Hypertrophy attend, venesection may become necessary several times ; and also in the dyspnœa attending disease of the Mitral Valve, with the vital powers of the patient still unexhausted ; it may then be repeatedly useful.

Purgatives are very useful ; indeed, without them, we shall often do little against Dropsy. The hydragogue cathartics are well borne. Mercurial purgatives are more particularly of great use, in Mitral Valve Disease, by keeping down the hepatic congestion, and by preventing fulness of the vessels of the Portal system. For further remarks, see Dropsy. Gastric irritation may require an occasional aperient.

Mercurials are of very great value in the treatment of almost all the forms of Cardiac Disease. In large doses, they are cholagogues ; in small doses, they are alteratives ; and in one form or another, they tend to promote recovery, and to obviate urgent symptoms. Like the alkalies, they seem to lessen the fibrine of the blood, and are thus highly useful in all forms of Rheumatism, as they are now well known to be. If we add them to purgatives, the absorbent vessels are more readily stimulated ; and there is hardly any combination of expectorants, or diuretics, the action of which will not be rendered more quick and more certain, by the addition of small doses of some mercurial.

Diuretics, it is now acknowledged, are amongst the most useful of all remedies in Cardiac Disease, and in exhibiting them, we need not wait for scanty or high-coloured urine, but give them in all cases. They often quickly relieve the Dropsy, and with it, the palpitation and dyspnœa. Their permanent operation is also beneficial by drawing off the serous portion of the blood, and thus, without causing exhaustion, they diminish the quantity of the blood, and lessen the weight of the heart's burden.

The best sedatives to be employed, with their indications and counter-indications, have been already mentioned.

Expectorants are indicated in Mitral Valve Disease; for the natural outlet to that disease would seem to be by the pulmonary mucous membrane. I have always combined them with diuretics, and at times with aperients. The stethoscopic indications of pulmonary congestion will tell us when to employ this class of remedies; and they should not be constantly employed. The oily, sweet, and nauseous expectorants are to be avoided, lest the stomach become irritated.

The alkalies should be combined with either the expectorants or diuretics we wish to prescribe, and they will be found an useful addition. They are particularly well adapted to cases wherein there is any suspicion of a Rheumatic complication; and to expectorants;—for some alkalies exert a decidedly sedative influence over an irritable mucous membrane, either of lungs or stomach, but especially of the former.

Emetics I would always avoid in Cardiac Disease, for their tendency is to increase cardiac conges-

tion, as every physiologist must be aware; still in giving Elaterium, emesis has been excited, and can seldom be prevented: but I have always tried to obviate vomiting by all the means in my power. It is certainly possible that the pulmonary mucous membrane may be so much congested as to require a gentle emetic; but I have always wished to remove such congestion by other means.

Sudorifics.—In cases complicated with Dilatation and reduced powers, these remedies may be useful, by determining to the skin, and they have been recommended when anasarca and permanent pulmonary engorgement exist. But I have found them rather inefficient in the severe lesions we are now considering, except as auxiliaries.

Alkalies are extremely valuable in obviating the gastric irritability which so seriously aggravates the mischief by exciting palpitation, and fierce paroxysms of dyspnœa. A mixture of Hydrocyanic Acid with Bicarbonate and Sulphate of Soda, perhaps a gentle carminative tonic, will sometimes afford striking relief.

Of tonics little need be said. They must be adapted to the peculiarities of each case.

In order to remove or assist in removing the anasarca, acupuncture has been recommended. Perhaps it will be well to repeat the remarks on puncturing made by a late author; who says, "We are to resort to them, only when other means have failed to relieve the Dropsy, and the cutaneous tension has become intolerable. Then some twenty or thirty small punctures may be made by a grooved needle in the thighs and trunk; but never

below the knees, so that the fluid may ooze out gradually."—I have found fewer punctures efficacious:—half-a-dozen will prove sufficient.

Diet.—This varies with the state; and accordingly as Hypertrophy predominates so must the diet be less stimulating; then allow less animal food and no stimulants; and as Dilatation exists, the diet must be nutritious, even stimulant, but avoiding much vegetables and pastry; also whatever will disagree with the dyspeptic must be forbidden altogether. A fit of indigestion in a person subject to Heart-disease is a fearful addition to the already existing distress.

The last indication is the palliation of symptoms; and here we must observe which of the three great viscera is most threatened—head, lungs, or liver. The two first are sooner implicated in disease of the Mitral Valve than in that of the Aortic Valves; and our treatment, fortunately, may be somewhat energetic, without too much lowering the powers of the frame—always a cardinal point in treatment. Vertigo, headach, sleepiness, muscæ volitantes, and other signs of impending cerebral mischief, are to be removed by cupping, derivative purges, blisters, calomel, &c. If the pulmonary congestion be the most prominent symptom, the dyspnœa will be urgent, and the mucous membrane will secrete a quantity of mucus; here, in combination with general treatment, expectorants, more or less stimulant, according to the sthenic or asthenic state of the system. If the liver is evidently enlarged, and causing appropriate effects, mercurials, free purgation, leeches and blisters to Hypochondria; while

in all cases of determination of blood to the interior of the body, we must try to maintain a free action of the skin, by adding sudorifics, warm pediluvia, &c.

There is one other symptom requiring attention, and that is Dropsy; and in these cases we meet with both Ascites and Anasarca. The first may be termed the result of a result, inasmuch as it arises from hepatic congestion or obstruction, or from fulness of the Portal system, which is the first effect of the obstruction to the course of the blood through the heart. Anasarca is a direct result, in comparison with Ascites.

If the disease be of long standing, and the dropsy threatening, little time is allowed for its removal, and we had better prescribe Elaterium at once; to which I add Calomel in small doses, if there be any ascites or hepatic congestion. The effects of this combination will be surprising enough, in some cases, although the patient may have much to suffer at first from the nausea and vomiting, which are but too frequently unavoidable. In the Case E. A., Valvular Disease, life was saved more than once in this manner. The best way to administer these medicines is to give a dose very early in the morning, and to give Hydrocyanic Acid when nausea commences. A second dose of the purgative may be necessary to secure the effect. By the middle of the day the patient will often be ready for dinner; at night, an opiate will secure good rest, and tend to quiet the gastro-intestinal irritation excited by the cathartic.

The Pulv. Jalap. C. succeeds best with some

persons; to which some Bicarbonate of Soda may be added.

When we find these, or any other purgatives, causing weakness and exhaustion, we must rely on diuretics.

Of diuretics there is a choice; and it is fortunate it is so, for they are uncertain in their operation, and we may have to try various combinations.

Digitalis, combined with Sp. Æther Nitr. in a Decoction of *Pyrola Umbellata* may be tried, but if diuresis do not soon succeed, we should not persevere.

An excellent combination has been recommended in Blue Pill or Calomel, with Pulv. *Scillæ* gr. i., and Pulv. Fol. Digital. gr. ss. three times daily—while for drink, some Cream of Tartar, with or without ginger may be ordered.

But it is unnecessary to discuss each article of the long list of diuretics. I will merely add that suffocation has appeared to be averted by the following combinations: the first of which acted by diuresis, the second both by diuresis and catharsis.

R. Oxymel. Colchic., R. *Scillæ*., Sp. Æther Nitric. singulor, ʒss. , R. Digital. ʒij. , Capt. Coch. parvum ter quaterve in dies.

R. Cambog. gr. iv., Sp. Æther Nitric. ʒj. , R. *Sennæ* ʒij. , Syr. Rhamni. ʒiij. , Aq. Menth. Pip. ʒss. ft. haustus—bis vel ad ter in hebdom. sum^s. Two minims of medicinal Hydrocyanic Acid have been usually given half-an-hour before administering the draught.

Many liquid stools, and after them, a considerably

increased secretion of urine will often speedily follow.

Diuretic drinks may be ordered, gin-and-water, gin-punch, and Decoct. Spartii. Scoparii, &c.

It is generally supposed that *Digitalis* and *Squill* are more efficacious when there is *Hydrothorax*; *Elatarium*, and the drastic cathartics in *Ascites*; and *Calomel*, *Squill*, Crystals of *Tartar* in *Anasarca*; but my experience does not corroborate this opinion, for with the exception of *Mercury* in *Ascites*, in the treatment of which it is indispensable, the various forms of diuretic and purgative remedies may be serviceable in all forms.

When all medicines fail, we resort to punctures; and sometimes, to help their action, we try by puncturing to lighten the load a little, and take off a little of the distention,—when the absorbents would seem to act more energetically than before. In case E. A. the distended integuments cracked, then ulcerated; and through that ulcer, poured a quantity of liquid, and the patient's life was saved.

The acupuncture needles may be applied in *Ascites* as well as in *Anasarca*. Assiduous friction of the legs will often help much.

One grand desideratum throughout the whole treatment is perfect rest, and I always endeavour to induce my patient to live and sleep on the same floor; and I arrange that his bedroom and sitting-room should always be on the same level, for no act of the patient seems to be more dangerous, than going upstairs, however slowly.

CASE XXXII.

August 8, 1834.—T. G., Esq., ætat. 58, or thereabouts; sent for me. He had been complaining for two or three years of violent headaches; for which he had been recommended a cold plunging bath every morning, and also riding exercise. He used to go out often with the hounds, and after a hard day's hunt, he would feel relieved; which appears singular, when we reflect on the *post mortem* appearances. I had often remarked, when I had casually met him, a peculiar look of the eyes, an occasional blueness in some parts of his face, with a look of distress and anxiety. Heart-disease had never yet been suspected. I found a strong hypertrophic impulse of left ventricle, with a loud first sound, extending beyond the left nipple and to the right margin of the sternum; the heart much enlarged; over the middle of the sternum, there was a strong double vibration or jarring to be heard and felt, to be traced upwards along the course of the aorta into the right carotid; but the systolic jar was more powerful than that with the second sound; the pulse was full, hard, and jarring; palpitations very violent and frequent; V.S., saline purgatives, sedatives, and antiphlogistics produced within a few days a marked amendment; and, on the 17th of August, I took my leave, as he felt comfortable. However, the amendment did not last long, for, on the 30th of August, I was again sent for, and found him much worse. The relapse had set in, after much excitement of a political nature, and after he had attended a public dinner, against the advice of his medical attendant, and in contravention of my warnings. Treatment was now of no avail, and, on the 2nd of September, after some trifling exertion, he died. On the 4th, the body was examined: the left ventricle was found largely hypertrophied and dilated; the muscular paries one inch and a half thick; there was a ring of ossification just above the aortic valves, so confining the valves as to allow of regurgitation; there was also a scale of ossification just above the ring, the edge of which seemed to jut out in the current of the blood issuing from the heart, and looked as if the current had washed it as it swept past. There was a gorged state of the vessels in the lungs. The head was not permitted to be examined. The course of this disease was rapid, though it had been years in

forming probably ; and certainly, for such a state as here existed, exercise and hard riding do not seem very appropriate remedies ; yet they seemed to be beneficial, perhaps through the compression of the muscles aiding the circulation ; and, perhaps, by an action on the skin. I did not, at that time, know enough of the diagnosis of heart-diseases, to be able to predict what would have been found *post mortem*. Were such a case now to occur, and the stethoscope to be early applied as it assuredly would be, might we not hope for much benefit from early judicious treatment ?

CASE XXXIII.

June 24, 1841.—Eliz. A., ætat. 40 ; complexion always dark red, at times purplish ; has been much worse since last Easter Monday ; is still regular ; legs œdematous, shining, hard ; anasarca of the abdominal integuments, but the fluid is all extra-peritonæal ; urine scanty, high-coloured ; pulse, small, irregular, and intermittent about every sixth beat ; about 76 in the minute ; a teasing cough which prevents sleep, but little rale in respiration ; bowels not open just now ; appetite not bad, and no indigestion ; does not know the cause of her attack ; never had Rheumatism, though she may have had pains flying about her ; does not know when she first felt dyspnœa. A bellows-murmur with the second sound, at base of heart, running upwards ; the left ventricle dilated with some hypertrophy, the former predominating ; great dyspnœa just now ; orthopnœa, obliged to be propped up nearly erect in her bed ; she seemed moribund. R. Elaterii, gr. iij. Chlorid. Hydrarg. gr. 24. Extr. Gentian Moll. q. s. ut ft. pilul 12. Capt. j. cras mane et repetr. 6^{tis}. horis. R. Sp. Æther Nitric. ʒj. R. Opii m. xx. Aquæ ʒj. hora somni quotidie.

June 25th.—Very sick from the pill—vomited thrice ; but the chest feels relieved already. Gin-and-water for drink at dinner, and when she feels sinking. June 27th.—Much better ; watery motions ; can now lie much lower in bed than hitherto ; feels lighter and her legs are considerably smaller ; the pills excite nausea and vomiting, against which she bears up well. To take her pill at 4 a.m., so that the action may be over before dinner ; her nights are good. On 29th of June the gums were tender and

the Calomel was discontinued. June 30th.—*Elaterii* gr. $\frac{1}{4}$ bis die. July 1st.—The pills work better without the Calomel—are more hydragogue yet with less sickness. On 10th of July, dropsy nearly gone everywhere, and I ordered three drops of Hydrocyanic Acid in Infus. Calumb. with *R. Humuli*; also a pill of *Pil. Scill. C. Extr. Coloc. C.* and *Pil. Sapon. Comp.* every night. July 12th.—No sleep all night from the violence of the palpitation; pulse small, weak, and intermitting; does not know why she is so much worse—may have caught cold; thinks her full diet disagrees, for since the 10th she has been able to eat freely. There was an attack of temporary congestion, which is not in these cases unfrequent. *V.S. ad 3vj.*; in the evening ten leeches; *Pulv. Jalap C.* 3ss. cras mane.

July 13th.—A bad night and roaming; this morning feels exhausted, but she got better after the powder had acted upon the bowels. Repet. *Pulv. Jal. C.* and the draughts ordered on the 24th of June. July 15th.—Legs and body swelling again, but heart's action less violent. Diuretics of Squills, Nitric Æther and *Digitalis*. July 26th.—Dropsy reduced, but cardiac action is again violent. To have two drops of Battley's *Liquor Belladonnæ*, ter die. August 1st.—No dropsy anywhere, and the heart's action is now quiet; the *bruit* still audible. On the 5th of August she was as well as she would be, and wishing to go to her family, she was discharged, in every respect improved, and no dropsy anywhere; she could walk about with ease. I never expected this person to leave the Infirmary alive.

On 9th of December, 1841, she was again admitted, in a very bad state; face darkened and swelled; the heart's size much increased, and extends far to left and to right of sternum, and also high up the sternum; very irregular pulse, 48 to 60 and hardly to be felt, intermittent as before; the jugular veins swelling with the heart's action; *bruit* and impulse as before; dyspnœa extreme; mucous rale general in the lungs; abdomen much distended with fluid; urine very scanty,—none has passed since last night; anasarca of legs as before. This was a critical state, and would not bear violent measures. Some pills of Calomel, *Pill. Scill. Comp.* and *Muriate of Morphine* were ordered at night daily—*Pulv. Jalap C.* ʒij. mane quotidie, et repetr. 4^{tis}. horis si opus fuerit, *Hirud. vj. sterno.* Dec. 10th.—The powder does not operate and

makes her sick; urine slightly increased. R. Solut. Elaterinæ 3j. (containing $\frac{1}{6}$ gr. of Elaterine) in distilled water, bis quotidie. Pilul ut ante. Dec. 11th.—Breathing a little easier, and the abdomen is softer; some tendency to diarrhoea. The Elaterine does not operate as a purgative, yet it nauseates as much as the Elaterium itself. Acupuncture. Dec. 16th.—Felt very bad yesterday, and as if dying, but is better now; the urine is more copious, and the stools also, but the legs, arms, and body are all dropsical. Dec. 19th.—Legs and body much swelled; the right leg up to the knee is very red, and from distention it has burst open at the lower and inner edge of the gastrocnemius—a little pus and a good deal of water has been discharged through the opening. Repetr. pilul. A mixture of Inf. Calumb. R. Scill. Sp. Æther Nitr. and Hydrocyanic Acid, ter die.

Dec. 23rd.—Urine very free; still much anasarca; acupuncture in six places. The dropsy decreased gradually, until the 6th of January, 1842, when my notes run thus:—legs of natural size and abdomen very small; a great deal of water has passed through the ulcer, which looks red and irritable; some erythema up the leg; the breathing and general state quite comfortable. On the 3rd of February she was discharged—free from dropsy—face not livid—breathing quite easy—pulmonic mucous membrane normal—all the thoracic congestion gone; and heart's action easy, though still the *bruit* is heard, but subdued. She took medicines with her to retard a relapse as long as possible.

This was a very interesting case; and proves what may be done by art, when the kidneys are sound, and purgatives can be borne. The prognosis in both attacks was as bad as could be. The safety valve in the last attack was the cracking and ulceration of the distended integuments; for which acupuncture seemed a poor substitute. I was fearful from the dark redness that a spreading gangrene would have ensued. I saw no more of this person, but heard of her death in 1843; but not till after she had been buried some time—as she lived at a distance of many miles—or I would have striven hard for an examination of the body. I never witnessed such extreme difficulty in carrying on the circulation as existed in this patient, but in two other cases. Her chances of prevention, and of a more speedy recovery, would have been greater than they were, could she but have got advice the moment

it became necessary ;—but much time had always elapsed before treatment was begun.

CASE XXXIV.

DILATATION OF LEFT VENTRICLE AND INSUFFICIENCY OF THE MITRAL VALVE.—Dec. 2, 1841. Jno. F., ætat. 45, on 2nd of June, 1841, came to me, for the second time, as an out-patient. He had been ailing since November, 1837, when he suffered from an attack of Rheumatism—is a groom, but is out of employment now, as he can do nothing ; he has been once before relieved by me, but I have lost the notes. His naturally florid face is dark red ; lips very dark, and face blue or livid at parts ; cannot walk, however slowly, on account of the palpitation and constant dyspnoea ; the heart much dilated, and to the left of sternum, the loud sound of Dilatation with considerable impulse ; a *bruit de soufflet*, sometimes double, but constant and most marked with the first sound, and louder between the left nipple and lower part of sternum ; there was considerable increased action of the right ventricle, heard and felt to the right, and up the two lower thirds of the sternum ; no murmur up the course of the Aorta, though there is an abnormal sound over the base of the heart ; no undulation, but fulness of the jugulars ; a pulse small and indistinct—a kind of double pulse, conveying the idea of a feeble fluctuation, and the heart's rhythm corresponded ; a pain near the nipple ; a dry cough ; at times mucous sputa tinged with blood ; orthopnoea ; mucous rale ; bowels free ; urine scanty and high-coloured ; the legs swell, but not so much as from the symptoms one would have expected. The state of the pulse was with me almost diagnostic of diseased Mitral Valve. R. Submur. Hydrarg. ℥iiss. Muriat. Morphin. gr. iv. Pil. Scill. C. ℥iv. Ol Carui. gtt. xij. ft. Pil. 24. Capt. ij. hora somni quotidie. A mixture of Sodæ Carbon. Sodæ Sulphas. R. Digital. m. xv., in a bitter vehicle. A blister, and Ung. Sabinæ to dress it.

On the 9th a few leeches. By the 16th, the gums were a little tender ; the pills were omitted. The chest distress seemed to be at once alleviated ; the pulse even, more distinct, and the impulse of the right ventricle is more normal ; urine increased ; œdematous

swellings gone. On the 28th of July he left and resumed light work, with a caution from me never to exert himself.

On the 26th of October, 1841, I saw him at work on the road, seemingly working as freely as the other men ; I again cautioned him.

Dec. 2, 1841.—He was admitted an in-patient, in a state of great distress. This was the third time he had been under my care since 1837. Since June last, the rhythm of the heart has become so indistinct as to resemble a tumultuous confused action, and the pulse corresponds. My memorandum on entering the case into my book was : that this case presented an extremely good illustration of the left ventricle not being protected from regurgitation, and of the total incapacity of the Mitral Valve to perform its functions. He thinks his relapse has proceeded from his having caught cold, while working in the wet; the knees are swelled, and the chest-symptoms as before, only more aggravated. Again a few leeches ; pills as before. A mixture of Sp. *Æther Nitric* in 3j. doses, with R. *Digital. Vin. Colchic. and Camphor*, was ordered every six hours. By the 4th he slept better. On the 5th, the urine began to flow freely. On the 6th, the dyspnœa was much relieved; the pulse fuller and a little more distinct ; the urine copious; some pain at sternum. Six leeches, and a tonic instead of the Camphor. 16th.—Can now lie down to sleep. On 24th, the head light and swimming. Omitte Anodyn. but continue the R. *Digit. and Colchic.*; *Cucurb. Cr. nuchæ*. 27th.—Much headache. R. *Pulv. Jalap C. 3ss. cras et alternis auroris*. 30th.—Headache relieved : it appears he is subject to what he calls bilious headaches; and here, the rest he has enjoyed, the nutritious though plain diet, and the deprivation of living in the open air, to which he has always been used, seem to have combined and caused headache. From Jan. 8th to Jan. 16th, 1842, he complained of motes before his eyes; of vertigo, so that he dared not walk alone; his pulse intermittent and only 45 in a minute. I tried free purgation by Calomel and Colocynth, and an aperient mixture. I discontinued the *Digitalis* and *Colchicum*. By the 20th these symptoms were dissipated; and on the 3rd of February he was discharged free from all dropsy—the breathing comfortable—the circulation quiet, though still regurgitation was going on. He became an out-patient for a time, and on August, 1842, he left off all medicines.

In October, 1843, J. F. fell down and died in five minutes. He had been struggling to force a calf into a pen at Hoddesdon; though I had so strongly warned him against making any exertion—even a slight one. I unfortunately could not be present at the post mortem examination, though invited. The account is this:—
“The blood perfectly liquid, though the examination took place after twenty-five hours had elapsed since death; the lungs, liver, spleen, and kidneys all highly congested, though neither was diseased—except the liver, which was enlarged; the heart enlarged to about twice its natural size; pericardium healthy, and free from adhesions or effusions; coronary arteries healthy; the left auricle and ventricle much dilated, and their walls thin and flabby; the Mitral Valve free from any deposit; the columnæ carnæ large and unusually developed;—it was clear from the appearance of this valve that when the heart was in action, regurgitation to a considerable extent must have taken place from the inability of the valve to close the auriculo-ventricular opening by a considerable space, so that as a consequence, the quantity of blood sent by the ventricle must have been a matter of uncertainty, and caused a tremulous fluttering pulse, which F—— latterly always laboured under. The Aorta and Aortic Valves were quite healthy; the right auricle much dilated and flabby, but the right ventricle normal and its valve the same. A pint of dark fluid blood escaped into the chest when the vessels were divided for the removal out of the chest of the thoracic viscera; the left lung compressed and filled with dark fluid blood; the right full of blood but not compressed; the muscles throughout remarkably dark-coloured, and dark fluid blood followed every incision; the body well supplied with fat; the small vessels on the depending parts of the body externally, were visible from the gravitation of fluid to the parts;—head not opened. My intelligent correspondent then asks, “What caused this man’s death? Was it, that the left side of the heart became so embarrassed that the ventricle, unable to recover itself, could no longer force its contents into the Aorta with sufficient power to supply the brain with its proper stimulus, that a state of fatal syncope was induced? Recollect, he was five minutes dying—I say, if he had lived a quiet life, without mental or bodily excitement, this disease would not have killed him for years.”

In this opinion I quite concur. As it was, the man lived for six years, under every possible discouraging and disadvantageous

circumstance, excepting only when he was under treatment as an in-patient at the Infirmary; and when attacks of suffering arose and would have been fatal, medical treatment restored him to life and even to labour. The poor fellow was obliged to work, and doubtless exerted himself in many forbidden ways, to which he was induced by an ill-natured report from a former master that he was only shamming, as his face looked healthy enough. Yet the face, to an experienced eye, would at once have proclaimed that there was mischief in and about the heart. I hardly think that the immediate cause of death was syncope, in the way my correspondent puts it—for it is often very difficult if not at times impossible to account for the death happening at any precise moment—yet here it appears to me that the struggles with the calf were sufficient. A greater demand was made for passing on the blood more quickly than usual through the heart—which the organ was incompetent to do, a great distention would ensue, and then a total stoppage. The only objection to this reasoning is, that he was five minutes dying;—but may not this be accounted for, by the still remaining irritability of the cardiac muscular fibre? This case is another illustration of the fact previously mentioned, that the frequency of recoveries, or the longer or shorter continuance of life, depends in a very great degree on the integrity or the healthy state of the secreting and excreting organs.

CASE XXXV.

CASE OF DISEASED MITRAL VALVE.—Mr. T. H., ætat. 58 or 59, of stout habit, had complained to me in 1838, of Rheumatic pains in his knees and loins, which annoyed him a good deal, and at times interfered with his very active business habits. I ordered him half-a-dozen pills of Blue Pill, Extr. Coloc. C. and Hyosc.—intending in a few days to persuade him to undergo further treatment. After the second dose, he declared his pains at an end, and refused to take any more medicines, either Colchicum, Alkalies, or any thing else. In 1839, I learnt from his family, that pains at times annoyed him, but he considered them trifling. In this summer, in taking a sea-side ramble, he could not run up and down the hills as he used to do, and he was more easily

put out of breath;—he complained much also of headache. On April 17th, 1840, I was sent for;—he told me the foregoing particulars, and also that a few weeks ago, while sleeping at a London hotel, he suffered from an attack of what he called asthma, but which was a severe paroxysm of dyspnœa. I ausculted very carefully his chest, which was rather chicken-breasted,—still the air-cells were duly filled with air, and I could discover no decided sign of cardiac mischief. Yet I could refer his symptoms to no other cause;—for although the liver seemed to project a little from under the right ribs, the symptoms could not in that way be accounted for. I now watched him more closely, found that he began to fail more and more—that he could not even walk in any degree fast. This I warned him against, but in vain; for being an energetic man, and having much weighty business to attend to, having entered into large speculations, he tried to persevere in walking fast, and in crowding too much business into too little time;—has always been a bad sleeper; pulse 84, rather full, quite regular; appetite delicate, and bowels easily moved. As he was always hurrying about, bolting a hasty dinner, and then mind and body immediately set to work, I thought his digestive functions might be in fault, and that the headaches arose from a sympathy through the *Par Vagum*. This opinion seemed probable, from the enlargement of the liver, as ascertained by percussion. Still I could not account for the violent attack of dyspnœa.

His medical attendant and I agreed upon trying *Pil. Hydrarg. Pil. Scill. Comp.*, with a mixture of Infusion of Columba, Soda, and Tincture of Hops;—but as to reforming his hurrying habits, or to induce him to rest an hour after dinner—it was not to be done.

After a little perseverance in this and similar treatment, he seemed well again; and I heard nothing again of him professionally, though we often met as friends, until February 7, 1841, when he complained of severe and paralysing headaches from the slightest error in diet; of little sleep; of dyspnœa in walking fast, &c.; of a dry cough, which was always violent in the mornings, as if to gather breath, he said; feet habitually cold; bowels regular; lowness of spirits. On Friday last, which was a cold day, he returned from London very ill. He had fasted from 7 a.m. to 2 p.m., and was under great exertion all the time;

pulse quick and full, not coaty; tongue disposed to be white; face florid; dyspnœa, and also a full inspiration, excite a feeling of uneasiness at the bottom of the sternum. I now was sensible of some hypertrophic impulse; and both the heart and liver seemed to have enlarged since I last ausculted; a dry cough; no pulmonic rales. It was evident there was some serious cause of mischief somewhere, for the Hypertrophy did not seem sufficient to account for the great dyspnœa; yet there was no stethoscopic indication of any other lesion. Some Pil. Hydrarg. and Pil. Sapon. C. at night, and an Alkaline aperient mixture were ordered.

Feb. 11.—Some Pulv. Ipecac. and Pil. Scill. C. was now given instead of the Blue Pill, which seemed to irritate the bowels. I can now detect Hypertrophy and Dilatation of the left ventricle.

Feb. 21.—Very heavy and languid; tongue yellowish, also the face in some parts. We heard of an hereditary tendency to the gout for the first time to day, but he had never been attacked; pulse quick, fluctuating, and irregular, though he has rested all day; can lie flat down in his bed, without difficulty or suffering. On the 24th a paroxysm of dyspnœa in the night. I had been urging for a consultation, and at length he consented. On the 19th of March I went to London with him for the purpose. Instead of driving to the railway station, he put his vehicle up at an inn, and would walk, though I tried to dissuade him from doing so. The railway bell rang, and he hurried; dyspnœa seized him; he leaned against the hedge till the fearful paroxysm mitigated. It was for the first time, and in consultation, that I heard the peculiar puff or pur that indicates a permanently patulous state of the Mitral Valve, allowing of regurgitation; and although I had ausculted over this spot frequently under expiration and inspiration; and although, from the peculiarity of the pulse, which had changed its character since the 21st of February, I was almost certain that this valve could not be sound, yet I never could before detect this murmur; the paroxysm in the field must have developed it; and I think the pur was heard with the first sound, and rather low down—a little to the left of the nipple. The pulse is now quite characteristic of this lesion, eminently fluctuating, or rather undulating, under the finger—a kind of unequal double pulse. The liver much enlarged, extending, when he is standing, down to nearly the umbilicus, and round over the epigastrium. The physician who made this examination with

me thought of three months' purgation, three or four stools daily, and Calomel. gr. ij., Extr. Col. C. gr. vj., Extr. Hyosc. gr. ij., Ol. Carui. m. j., ft. Pil. ij., nocte vel altern. noctib. sumæ. R. Infus. Sennæ 3x. Tinct. Sennæ 3ss., Magn. Sulph. 3ij., Sp. Ammon. C. 3j., Extr. Glycyrrh. 3ss., Cap. mane post pilul.

Our patient was of irritable bowels, and the purgation did not agree; and anasarca of the legs began to show itself, and to increase. On the 24th the dyspnœa and paroxysms were severe. I warned him against all exertion, even the slightest; but he would not listen to having his bed brought down to the ground-floor, so as not to have to go up-stairs at all. On the 27th, about 1 a.m., he would not awaken any one, and went down one flight of stairs for some peppermint lozenges; but on getting near the top, on his return to his bedroom, he fell forward, and died instantly; it seemed as if the lozenges and candle had been thrown forward.

In a few days after the death, two medical gentlemen and I examined the body. We found the liver very large and congested, but not otherwise unhealthy; the Pericardium unhealthy; the left ventricle of the heart was much enlarged, and its walls thickened; the Aortic Valves were healthy; the Mitral Valve was agglutinated into a round hole of the 3rd or 4th of an inch in diameter, through which the blood must have regurgitated most freely. Indeed the orifice seemed to be so fixed, as that it probably varied but little in its diameter, either when the blood entered the ventricle from the auricle, or regurgitated from the ventricle to the auricle. No other morbid phenomenon.

This was a highly interesting case, from its slow insidious character—from the obscurity of its nature—from the very slight symptoms at first, and from the ultimate very rapid progress.

Although at first the digestive functions seemed in fault, yet the continued, the increasing dyspnœa, without any sensible or detectable disease in the lungs, early led me to a suspicion of the heart being affected. At length, though late, the pulse became a pulse indicative of Mitral Valve mischief; but still there was no distinctive sound by auscultation, until after the violent death-like paroxysm occurred in the fields, while going to the railway. The disease then was at once manifest, but still no idea of immediate danger was apprehended; for a three months' purgation was talked

of:—yet in eight days thereafter the patient died. Had he avoided all exertion, as he was requested to do, there was much probability of his living much longer; for although his dropsy had increased to a great extent, I should have had little fear about not being able to remove the effused fluid by a course of diuretics—which we were on the point of entering upon.

From this case, may we not infer that we ought not to consider as trifling any attack of Rheumatism—not merely attacks of Rheumatic Fever, but even Rheumatic pains, however slight in all appearance. There is no doubt this patient's death was accelerated by what may be called obstinate self-neglect.

CASE XXXVI.

Wm. G., ætat. 20, was admitted on the 7th of January, 1841; short and stout; ruddy-faced, though the red was darkly-coloured.

His father says, there has been great dyspnœa from birth, but he cannot recollect whether his boy's face was ever of a bluish colour. Has had an attack of Scarlatina, and his breath has been much *worse ever since*. There is now a strong impulse of the left ventricle, and a bellows-murmur with the first sound, heard loudest at the lower part, and to the left of the sternum, between it and the nipple—not heard high up. High up the sternum, on a level with a line, extending between the second and third costal cartilages, there was a sound on percussion which I should have thought betokened pericardial effusion; but having met with similar sounds before, and found out their cause, I conjectured that the right auricle was enlarged. The first sound, too, was abnormally loud, from the middle all down the sternum; and for about an inch to the right of the sternum with considerable impulse; the pulse was small and 120; occasionally violent palpitations, with dark redness of face and lips; a pain in the back; no pyrexia; natural functions healthy. After some aperient medicines, Calomel, gr. ij., and Extr. Aconit. gr. $\frac{1}{8}$, night and morning were given. By the 12th the palpitations had disappeared, and on the 14th my remarks are—no bellows-blast at all; pulse 60; *gums tender*. Carbon. Potass., Infus. Sennæ, and Acid Hydrocyanic were ordered. By the 18th, the bellows-murmur was returning; gums well. Extr. Aconit. gr. $\frac{1}{4}$ singul. dosib. misturæ. Admr. Hirudin

xij. region. cardiac. 21st.—Heart's impulse increasing. 24th.—Violent bellows-murmur and impulse returned; complains of great shortness of breath; pulse synchronous with the heart and with each other—regular, small, 100. Double the dose of Aconite, V.S. pro viribus. 28th.—Repetr. mist. $\bar{c}$ Extr. Aconit. gr. $\frac{3}{4}$ Singul. dosib. Feb. 4th.—Some abatement of the heart's beating. Feb. 7th.—Fiat Fonticulus region cardiac. By March 4th the violent symptoms were all again removed, and he was discharged; but the organic lesions remained untouched by treatment.

On the 26th of June, 1841, I was sent for to see this lad, and found he had not long returned from a London hospital. There was extreme dyspnœa, and the physical phenomena were much the same as in January. On the 29th of June, 1841, he died at 1 a.m.; and on the 1st of July, two medical gentlemen and I examined the body. Body very sallow, not thin; the right auricle was much enlarged and thickened in its texture; the coronary vein unusually large; the fossa ovalis about twice its usual size; the right ventricle also very much enlarged and thickened; the pulmonary artery was at first mistaken for the Aorta—it was twice the diameter of the Aorta; the left auricle was large, but the left ventricle was small; the left auriculo-ventricular opening was very small indeed, and the top of the Mitral Valve was of hard cartilaginous texture, with an ossified lump in it:—some fluid in the Pericardium; the Aorta was small; the Aortic Valves sound; the lungs were crepitous, but full of blood—they seemed sound.

This case gives us reason to conjecture that the Foramen Ovale did not close till after some considerable time after birth. The cause of death seems only to have been actively in operation since the Scarlatina attack, soon after which the Mitral Valve became diseased, and thus, in combination with the long-standing state of the right cardiac cavities, soon led to a fatal result. The auscultatory phenomena corresponded with the pathological state, excepting the dilatation of the pulmonary artery, which was not suspected by me before death.

This case shows that Corvisart is not correct when he enumerates a blue or violet colour of the face as appertaining to organic lesions of the right cavities of the heart. There was no blueness of the face in William G.

In the foregoing, as well as in the generality of instances of

Mitral Valve Disease, there has been and will be usually a hypertrophic action, if not actual Hypertrophy of the right cardiac ventricle and left auricle, to compensate for the obstruction existing in the left ventricle to the course of the blood through it; but at page 125, it has been written, that if the pressure be too great, or the cardiac walls themselves too weak, they give way, Dilatation alone ensues, and the circulation of the blood is carried on, with great difficulty, in extreme cases.

These are cases of great difficulty, and require treatment very different from that which is desirable, where the left auricle is hypertrophied, and the right ventricle acting with unusual force at the same time. In these latter cases, *Digitalis* is peculiarly serviceable; for it protects the lungs from the too powerful action of the right ventricle; it lessens dyspnoea; it prevents hæmoptysis; and allows the left ventricle to be less overpowered by the onward pressing current. In the present instances, we want more action than we have got, for there not only may not be sufficient action to overcome the mechanical resistance, but there may hardly be enough to prevent the heart from suddenly suspending its labours.

Our aim, then, should be to increase the action and power of the left auricle; yet without allowing a hypertrophic action of the right ventricle to be induced. As stimuli act simultaneously on both these parts, we must be on the watch, auscult the right cavities very frequently, and withdraw stimulus in time.

The diagnosis of such cases is not more difficult than that of the other kind, and it will be exemplified in the following case.

CASE XXXVII.

T. C. Esq., ætat. 60, suffered about ten years ago, from severe Rheumatic fever, but he cannot recollect any thoracic symptoms, soon after that attack. In 1837, he again suffered from Rheumatism, in a severe form—pyrexia high, and one side so paralysed as well as swollen and painful, that the friends thought his case was one of palsy, of which disease his father died. The disease had been going on for some days, before I saw him, and I found the chest participating in the disease, though not in the form of Endocarditis nor Pericarditis. There was a great tendency to syncope—with hypertrophic impulse of the heart at other times; no tumul-

tuous action as we have in Endocarditis. Unfortunately his stomach was peculiarly irritable, and he could not bear any Alkalies at all. He recovered, however, better than we expected, and went and rode about as usual, only that he would sometimes suddenly feel giddy; and once he had a fall, preceded by a sudden giddiness. He also could not walk about very fast, without inconvenience. Again, in 1844, he had another attack of Rheumatism, with tightness at præcordia. Again he recovered, and nothing of cardiac derangement could be discovered by stethoscope or percussion, yet his heart was easily excited into great action. At times he walked up the Dover hills without difficulty, and he seemed in pretty good health. Towards the end of the year he suffered from repeated colds—perhaps mixed up with Rheumatism—and early in 1845, he went to Kensington for change of air. This place seemed to disagree with him. By the end of January, he put himself under my care, and his present state is as follows:—face livid and slightly puffy in parts; no fulness of jugular veins; sleeplessness for (he says) many weeks; was obliged to ascend two flights of stairs to his bedroom; no pain, but tightness in præcordia; the heart full of blood and labouring; instead of the first sound, a puff or blowing sound, heard below and to the right of the left nipple, midway between it and the sternum—very distinct; yet not heard at all over the heart's base, that is, at mid-sternum and on a line with the lower margin of the third left rib; the pulse small, quick, and feeble, unequal, but not intermitting, synchronous in both wrists, and with the heart; the right ventricle acting feebly, and dilated; right auricle dilated; no pulmonic rales; distressing dry cough; orthopnoea, and waking in fright, and as if after nightmare. This last feeling shortens sleep; great languor and deathlike syncope occasionally, at which times the surface becomes of a dark cadaverous yellow; the feet, skin, and hands always cold; urine loaded with the lithates and scanty; bowels confined; much flatulence, to which he is subject; ancles œdematous, and ascites had been suspected, but I could not detect any ascites; paroxysms almost like those of Hysteria; the slightest exertion exacerbates.

Our indications here were to increase the propelling power of the left auricle and right cardiac cavities; to prevent the right cavities from being distended as much as possible; and thus lighten the labour of the left ventricle; to empty the liver as much as pos-

sible ; and to excite both the urinary and the cutaneous functions.

Now to have detracted blood by the arm to any considerable amount—to have exhibited *Digitalis* or any sharp Hydragogues—would have been to have sent him speedily to the grave. *Digitalis* I have described as being adapted to cases of Mitral Valve Disease; but then they must be cases where there is Hypertrophy of the right ventricle, with plenty of action in the heart;—here the heart seemed about to stop many times in the day, and the coldness of the surface, the pulse, the languor, all proclaimed debility—local and general. The heart seemed so very full of blood, which it seemed incapable of passing on, that I ordered one cupping on the sternum. This relieved the dyspnœa a little. He then took anodynes, with *Pil. Hydr.* and *Pil. Scill. Comp.* night and morning;—diuretics and tonics during the day; purgatives occasionally, which brought away motions at first clayey and light-coloured, indicating that the liver had suffered from the heart-affection; then dark motions. The anodyne removed the cough, and enabled him to enjoy a few snatches of sleep. Brandy-and-water and gin-and-water were allowed to prevent or shorten the attacks of syncope, and pediluvia of mustard and hot water were directed to be held in readiness. His bed was brought down to the basement-floor, so that he had no steps to ascend, and he slept on a raised pillow, so that the body is maintained during sleep in a semi-erect position. His state was soon amended in several respects—dropsy, which had been impending, was kept at bay; his appetite improved through the use of tonics; the dyspnœa lessened; and he became more comfortable. A nutritious diet is allowed, and stimuli according to necessity; but the urine and alvine excretion are kept constantly, though alternately, active. One great difficulty in this case, was the irritability of stomach, which debarred us from giving many useful remedies—for instance, *Sp. Ammon. C.* would cause a spasm in his throat and cause sickness, Alkalies he cannot bear, and sharp purgation would go well-nigh to kill him.

The first effect of this system of treatment was so to modify at times the abnormal and characteristic sound, as to render it almost inaudible by the stethoscope, except to a practised ear. Sometimes the sound will be heard for perhaps a half of the first healthy sound, and only faintly; and this will happen after a good night's

rest, and after the circulation has been well maintained ; but at other times, after a restless night, and when there has been irritation from purgatives, flatulency, and want of appetite; then the sound of regurgitation becomes more manifest, and quite distinct, to any ear not deaf. The first time, the gentleman whom I meet in consultation, ausculted, the peculiar sound was indistinct, almost inaudible ; but in two days afterwards, he heard it very distinctly indeed. The case is still under treatment, and is at present going on as favourably as we can expect. The medical attendant is inclined to date the origin of the heart-affection from the Rheumatic attack at Weymouth—for he had observed occasional dyspnoea ever since; yet the treatment was exceedingly energetic at Weymouth, and the patient was reduced very low by the Colchicum, &c., but no Alkalies were given.

CASE XXXVIII.

SUSPECTED DISORDER OF THE TRICUSPID VALVE—REGURGITATION THROUGH IT—FUNCTIONAL HYPERTROPHY AND DILATATION OF THE RIGHT VENTRICLE.—Eliz. W., ætat. 16½, was admitted on the 21st of November, 1839; is of dark complexion; has had a hard place; been obliged to lift heavy weights, &c.; face pale, livid under the eyelids, headache, and the pain is in the forehead; menstruated about six weeks ago, for the first and last time; some pain in loins; urine and bowels normal; appetite not good; feet cold, also the surface of the body; great dyspnoea, increased on exertion; no cough; much palpitation; pulse 118, not strong, quite regular; the artery seems very small to the finger, and solid. There is a bellows or blowing murmur heard with the first sound, about the medial line of the sternum, extending down the sternum, and heard also to the right of the sternum; but no abnormal murmur to the left, nor in the left præcordial region, nor in the carotid arteries. There was hypertrophic action of the right ventricle, the impulse of which could be felt to the right of the sternum. The jugular veins seemed always full and distended, and she told me she had remarked that they used to swell and beat in her neck, but I saw no pulsation. I ordered Iodine foot and hip-baths every other night, an Aloetic pill every night, and a

bitter tonic with some Carbonate of Soda and Hydrocyanic Acid.

By the 28th she was improving fast. The Aloetics were continued till the 20th of December, when Quinine was added. On the 9th of January she was discharged quite well—the abnormal murmur quite gone, the hypertrophic impulse had disappeared, and nothing morbid could be anywhere detected. The Iodine baths seemed to exert a most beneficial action on the system, and the very first seemed to give some relief to the thoracic uneasiness. When she left, and before she left, the unhealthy look of the skin and face, had given place to an appearance of perfect health. The blowing-murmur in this case, was at times, very distinct.

CASE XXXIX.

PROBABLE OBSTRUCTIVE DISEASE OF AORTIC VALVES.—Hannah M., ætat. 32, was admitted on the 2nd of June, 1842; of very dark complexion; no children; menses regular but scanty; been lately in two London hospitals; extensive ascites and anasarca, in consequence of Heart-disease; urine very scanty; great dyspnœa with frequent palpitation; hypertrophy and dilatation of the left ventricle, which is much enlarged; there is a noise with first sound, over the base of the heart, running up the Aorta.

R. Pil. Sapon. C. gr. v. nocte quotidie. R. Chlorid. Hydrarg. gr. xij., Elaterii, gr. viij. ft. ope Extr. alicujus idonei, Pilul. 24. Capt. j. primo mane et repetr. 4^{tis} horis.

June 5th.—Much smaller legs and abdomen, but the Hydragogues have caused piles, to which she has been subject of late. Some diuretics in the Infusion of Gentian were ordered. Some Pil. Scillæ C. at night.

On the 9th, it was discovered that her husband was and had been in the receipt of parochial relief, and she was, much against her will, discharged; but the relief afforded by the Mercury and Elaterium was very striking—not a drop of effused fluid was left, nor a vestige even of dropsy. I lost sight of this person, and never learnt when she died.

CHAPTER VIII.

SOME OBSERVATIONS ON THE TREATMENT OF
ANEURISM.

COULD we be aware of Aneurism of the Ascending Aorta or of its arch, while the disease was still in its early stage, treatment might be very efficacious—even perhaps unto cure; but unfortunately, there is no pathognomonic sign of this disease, while it eludes both sight and touch; and the records of surgery tell us, that large Aneurisms have existed and caused death, without their existence having been even suspected. The only unequivocal sign is a tumour presenting externally, and offering an expansive as well as heaving pulsation, synchronous with the heart's. The general signs are stated by the latest author on this subject, to be those which are ordinarily met with in Heart-disease, and to depend on a similar cause—namely, obstruction to the circulation. But if the Aneurism do not occasion any obstruction to the circulation, these general signs will not present themselves, and the Aneurism may exist unsuspected for many years—till Hypertrophy or Dilatation of the heart be superinduced—then the disease progresses rapidly.

The diagnosis of Dilatation of the Ascending Aorta, and of its arch is thus laid down: Physical Signs—a constant pulsation above both clavicles at their sternal ends, stronger on the right side if the enlargement is confined to the ascending portion, and never communicated to the sternum or ribs, unless the Dilatation is enormous. The next sign is a hoarse, rasping murmur, synchronous with the pulse, above both clavicles. If the ascending portion be diseased, the sound is louder above the right than above the left clavicle, and also along the tract of the Aorta, up the sternum; it is superficial, and often of a whizzing or hissing character, by which, and by the murmur being loudest high up the chest, it is distinguished from that of diseased Aortic Valves. It is usually distinct in the back, where the ventricular sounds, if audible at all, are very obscure.

One other sign is a purring tremour above the clavicles, but never below them; and it is stronger and more grating in proportion as the interior of the Aorta is overspread with hard or osseous inequalities.

Sacculated Aneurism of the Thoracic Aorta is shown by a pulsation both above and below the clavicles, but usually stronger below. If the Ascending Aorta be the site of the tumour, the impulse is most perceptible on and to the right of the sternum; if seated in the commencement and middle of the arch, there is an impulse above and below the right clavicle, and about the top of the sternum; if seated at the commencement of the Descending Aorta, the pulsation and swelling incline

to the left side, and sometimes reach to the shoulder; if the tumour occupy the Descending Aorta, there is no impulse perceptible in front; and this Aneurism can only be known, if large, by other physical signs, such as dulness on percussing over the site of the tumour in the back, and by a deficient respiratory murmur. The murmur and purring tremour are similar to those attending simple Dilatation—varying with the site.

Dr. Corrigan recommends us to place our patient in a horizontal position, or with the abdomen raised higher than the chest, when we have reason to suspect an incipient Aneurism. A murmur may sometimes be thus detected or developed in an Aneurism which did not previously exist. Dr. Hope says—“This position, by removing hydrostatic pressure, diminishes the distention of the sac, and consequently permits a freer flow of blood, into and out of it; and it is by the inward current that the murmur is occasioned.”

I am now in attendance on a person under fifty years of age, who, for the last two years, has laboured under the following symptoms, and whose disease I consider to be Aneurism of the arch of the Aorta, as it is about to turn to the left, after the giving off of the left Subclavian Artery.

There is a double murmur heard through the inspiratory murmur, and continuing while the patient held his breath, midway between the sternum and the left boundary of the chest, above the upper edge of the second left rib; the murmur is peculiar, partaking of the bellows-puff, and the second sound is very short, and much less distinct—with this mur-

mur there is an impulse, raising the stethoscope. The murmur will be very distinct for six beats, then intermits for two or three beats, and so on. There is Dilatation of the heart; at times he can walk five miles with more ease than he can walk half-a-mile at others; he is disposed to flatulency and disordered digestion; feet cold always; pulse synchronous and small; about upper part of left arm there is a dragging feeling and numbness; there is pain extending from heart round to scapula; heart's natural sounds distinct at the base of heart, where the murmur is not heard; nor is the murmur to be heard in the back.

This person had been subject to fulness of the head, for which a seton in the neck, and then an issue on the arm were ordered;—about two-and-half years ago, the issue was by advice dried up, and then began his present symptoms.

The chief difficulty seems to be in distinguishing between these Aneurisms and diseased Aortic Valves; but, says Dr. Williams, if the signs of obstructed Aortic Disease be not found distinct at the mid-sternum, whilst the first sound is loud, harsh, and deep in the upper sternal region and over the carotid arteries, the probability is that it is produced in the artery; and even if there be signs of diseased Aortic Valves co-existing, there is probably disease of the Aorta, when the murmur in the arteries is single; and much louder and more harsh than that heard at the mid-sternum, while it is attended with increased pulsation. The Aorta transmits its own sound rather than those of the heart.

The signs of disease of the heart are to be found

to the left of the sternum; those of Aneurism of the ascending Aorta mostly to the right of the sternum. These are the broad lines of distinction, but cases will happen, it is to be feared, which may elude the powers of the most experienced auscultator; and this is the more to be regretted, on account of the great importance of an early diagnosis; for when a large external swelling through eroded ribs, reveals the nature of the case—the hope of recovery is lost.

For further details and for the mode of detecting sources of fallacy in the diagnosis of the various kinds of Aneurism, the student should consult the standard authorities who have written on the subject.

The early treatment is very important, and whenever we are able to detect an Aneurism of the Aorta before the tumour has grown very large, a hope of even cure may be permitted, and certainly of prolongation of life from treatment.

The treatment up to within a few years has been that recommended by Valsalva; but many gentlemen have found that such a plan of treatment did not prove successful, while it invariably caused the utmost discomfort in the patient, indeed such discomfort as to demand on the part of the patient very great fortitude. The late Dr. Hope says, that if he had been the subject of Aneurism, he would have rather taken the chances of the disease than have undergone a Valsalva treatment.

A late eminent surgeon comprised all treatment under small and repeated blood-lettings, low diet, and the exhibition of Bicarbonate of Soda; and this last remedy was pushed in some instances even to

the production of spots of purpura. Alkalies are, perhaps, the very last remedies one would recommend in this disease, on account of their tendency to thin and liquify the blood, whereas our object here, would be rather to thicken than to thin it.

The indications of treatment are so to reduce the impetus of the circulation as to render the current of the blood through the aneurismal sac as slow as possible and yet not to lessen the quantity of fibrine in the blood.

The treatment now most generally adopted is that which was proposed by the late Dr. Hope. He advises a venesection unto twelve or twenty ounces—then every four, six, or eight weeks, abstraction of six to eight ounces of blood from the arm—according as the strength of the pulse and the pulsations or impulse of the tumour seem to require—and he directs us to stop all V.S. on the first appearance of any signs of anæmia; viz., paleness of lips, palpitations, or general weakness or languor. With this he combined the use of Digitalis, or Acetate of Lead; a rigidly spare diet, and the utmost quietude, mental and bodily.

The object of all treatment is to promote as much as possible, the deposition of layers of fibrine, in the form of coagula, on the inner surface of the sac. Now it appears to me, that the modified treatment just described, requires still further modification. The chief difficulty seems to be, the keeping down the impetus and mass of the blood—which has been attempted hitherto by V.S., as a principal means—but such repeated abstractions of blood, even of the smaller quantities here cited, have always produced,

according to my experience, very distressing irritability and languor in the patient; while they have been immediately followed by signs of reaction; which reaction occasions increased impulse in the tumour. They have also tended to the more rapid reformation of blood—to a hurtful abstraction of the fibrine—and their beneficial effect has been lessened by that law of habit to which the human frame is subject. At the onset of our treatment, if our patient is still of sthenic habit, if the abnormal impulse be considerable, and a general fulness of the vessels exist, I would have some twelve to eighteen ounces of blood abstracted; but having done this, and so lessened the calibre of the arteries, and reduced the local impulse to a certain extent, I should, taking the average of cases, avoid further venesection, and reserve it for any inflammatory complications, or any extraordinary occasion which may arise; and would rely on other means of keeping under control the arterial circulation, general and local; which means shall not abstract any of the fibrine of the blood, as blood-letting must do, nor have the slightest tendency to induce an anæmic state with its never-failing attendant distress.

Purgatives are exceedingly well adapted for lowering the quantity of serum in the blood, and for gradually rendering the serum less stimulating. Elixterium has been recommended when a powerful effect has been desired in a short time; but although every one must allow the eminent hydragogue powers of this remedy, yet I do not think it well adapted to cases of Aneurism. Unfortunately it can rarely, if ever, be administered without exciting a

severely straining and exciting vomiting, and surely nothing can be found more prejudicial than nausea and vomiting would here be; the first by impairing the appetite and digestion, the latter, by its rousing into excitement the whole system, and by the still greater danger of a rupture of the tumour during the straining efforts. Occasional purgation, at short intervals, with the Neutral Salts, will prove efficacious enough; the Sulphate of Magnesia, after two or three active pills the night before, the Supertartrate of Potass, with Jalap, and Hydrocyanic Acid preceding it, will answer our purpose; without running any risk, or without inducing gastroenteric irritation.

Diuretics must be resorted to, alternately with the purgatives if we choose, or at the same time; the former being given during the day, the latter at night and early morning. In this way these remedies have proved so powerful as to induce even a state of anemia; if they have been too long persevered in.

Sedatives.—The only two, generally prescribed are, Digitalis and Acetate of Lead. With respect to the first, the directions usually given for its exhibition, show how very distrustful the medical practitioner is of its action. We are directed to give it for several weeks, then to interpose a week or two, so as to prevent the probability of its acting like a poison by its cumulative influence. Some authors have ordered it to be given in combination with several corrigents, as Oxyde of Zinc, Subnitrate of Bismuth, Subcarbonate of Steel, or Calcined Magnesia, to prevent nausea and signs of saturation; while all concur in saying, that if there is a

red tongue, or any sign of gastric irritation, it will fail altogether and become even hurtful.

Besides these objections, there are many cases of Aneurism which would not admit of its exhibition at all, viz.: all those complicated with or attended by, debility or Dilatation of the heart, with Atrophy or softening of the heart, and with great Valvular Disease; for in such states the Foxglove might prove fatal, by inducing the formation of polypus in the heart.

Here, then, are many cases, in which this plant ought not to be administered, and it becomes desirable to seek for some other sedative, not open to similar objections.

The Lead has been given as a sedative, but it requires caution, and cannot be ventured upon, without certain corrigents being added; and even with such addition, it has been productive of serious mischief, in certain habits, we are told. This medicine has a tendency to irritate the mucous membrane of the stomach and bowels; wherefore if required to be given in sufficient dose, we are forced to add either Opium, or large quantities of Vinegar. In all cases of Aneurism, we must endeavour to prevent congestion, or fulness of the heart and great vessels, by maintaining the utmost freedom of the secretions; Opium will, therefore, be highly objectionable, by its tendency to induce costiveness, to lock up all secretions, and to excite capillary action; while, as to the other corrigent, large doses of Vinegar, they will cause gastro-intestinal irritation, and thus a discontinuance of them will be enforced.

Under these circumstances, we must find some other remedy as a sedative, and it appears to me, that Aconite will supply us with one, highly useful, if not in every respect, unobjectionable. The Belladonna will also act in a similar way, though as I have before stated, I have not seen the buffy coat diminished or removed, by or during its administration. Undue action may be thus kept down, and the pulse lowered very considerably indeed, while a scanty diet will prevent a refilling of the vessels. Rigorous quiet is to be maintained. If we are obliged to discontinue this remedy, the Hydrocyanic Acid may be given; though the Aconite does not seem to disagree in any way, as may be seen in the case of Aortal Aneurism, related early in these pages. The dose, I have ordered at first, has been one-eighth of a grain, and I have cautiously, though perseveringly, increased it. Should it prove as effectual and as beneficial with others, as it has proved in my practice, a powerful auxiliary will be added to the list of remedies at present existing; and when we reflect on the number of cases, in which the Digitalis cannot, or ought not to be used, its value will be much increased.

Diet is of great importance; and we must so arrange it as to keep the patient as low as possible, without causing irritability or anæmia. The severity of the Valsalva treatment has been abandoned as excessive, and a modified system is now recommended. One cardinal point is to adopt as dry a diet as possible, so that a very small quantity of liquid is daily taken. To this the patient will soon become accustomed, to what at first may appear to

be a great privation. A little animal food once a day may be allowed; except in plethoric subjects, or when there is a disposition rapidly to reproduce rich, fibrinous blood; then food solely farinaceous, must be ordered. The quantity of both liquids and solids to be allowed, must depend on each individual case, only the patient is to be kept just so low as to escape inducing anæmia.

The patient should take passive exercise, and avoid muscular exertion of every kind, just as if he were labouring under some of the forms of Heart-disease which have been described.

The tumour should be protected from blows or pressure, by some mechanical contrivance. All external applications seem of little use in Aneurism.

Such appears to be the best system of treating Aneurisms; and if we are but so fortunate as to detect the Aneurism in its early stage, much of even radical benefit may be expected, if the Aneurism be of the false, or even mixed species. "When the Aneurism is of the true species—and this generally is the case with those of the arch, and ascending portion of the Aorta—a cure is scarcely to be anticipated, as coagula can scarcely ever be made to form in the sac; still, life may be prolonged," says Dr. Hope. The patient is not to return to active habits, till a year after the disappearance of all the symptoms; while the cure itself should be steadily pursued for one, two, or three years—for in no shorter time can the coagulum which fills the sac undergo a sufficiently firm organisation to render the reparation secure.

CHAPTER IX.

PALPITATION AND FUNCTIONAL DISORDERS.

THE palpitation attending on organic disease has been described—and the functional only is here alluded to. It has been called palpitation from inorganic causes. I have mentioned before, the close resemblance which functional disorders occasionally bear to the organic; and I have also said, our inability to distinguish in some very doubtful cases, is not to be regretted; for while, in cases purely functional, we can almost always make up our minds as to the diagnosis, we know that some cases may appear decidedly organic, yet that they are not such in reality—or, at least, that they are curable.

To the humane practitioner, it must be a solace and a pleasure, during his often melancholy routine of duty, to be able to assure his anxious patient that his disorder is merely functional—that possibly he will soon be well—and, at all events, that life is not so threatened as was supposed. On the other hand, a decided opinion of organic disease must not be hastily announced, but time allowed for remedies to act. I have read with much pleasure three cases just published by Dr. Christison, of Edinburgh, in

the "London and Edinburgh Monthly Journal of Medical Science," for February, 1845; which cases appeared to be those of organic disease, yet were only instances of functional disturbance. The three peculiarities in which the symptoms differed from those of mere functional disorder, Dr. Christison says, were, "the constancy of the leading symptom, violent pulsation in the præcordial region; a preternatural heaving impulse was always to be felt, in more or less force, in the left side of the chest. The second peculiarity was, that the apex of the heart might be felt with the hand, pulsating, not as usual, under the left nipple, between the fifth and sixth ribs, but directly under their costal cartilages, very near the sternum, and generally between the fourth and fifth ribs; and this is one diagnostic between these functional cases and those of unequivocal Hypertrophy, with enlargement of the heart; for in that disease, the apex commonly pulsates much further from the sternum, and lower down than in the space between the fifth and sixth ribs."

The third distinction is, that "the dulness, on percussion in the cardiac region, is not so extensive, nor does it reach so low down as usual; there is no sound indicative of Valvular Disease, no irregularity in loudness or interval; no upheaving impulse behind the upper end of the sternum, no pulsation in the jugular veins, and no unusual sound or impulse in the Subclavian arteries; or, at least, none proportionate to the augmented cardiac impulse."

We must not, perhaps, rely too much on the second character of distinction—as in concentric Hypertrophy, the heart's apex mostly beats higher up

than usual. The cases are highly interesting, and encouraging, both to medical man and patient. They are strongly corroborative of preceding remarks on this subject.

Functional palpitation occurs only occasionally; *it is not excited, but often relieved, by corporeal exercise*; and this is a very distinguishing mark, for organic palpitation is both excited and augmented by exertion, even very slight exertion; it may come on, while quiet though wakeful, in the night; it is accompanied by nervous symptoms; *during the intervals*, the pulse and action of the heart are natural; and this is another distinguishing mark.

The causes of functional palpitation are various: any irritation or excitement of the nervous system acting through the reflex function, may cause Dyspepsia, Hypochondriasis, Hysteria, Gout, Rheumatism; debility, however induced; anæmia; disturbing mental emotions, &c. Too stimulant a diet has been cited as a cause. The treatment must vary with the cause of the disorder, and state of the patient; and further detail is not needful. The only practical remark I will make is, that the practitioner should not content himself with merely removing the paroxysm, but should carefully pursue treatment for some days after its disappearance, in order that no foundation may be laid, by repeated attacks, for organic disease, through the congestion which is likely to be produced by the paroxysms in various viscera.

When the paroxysms are of short duration, and appear at long intervals, there may be little or no danger; but, under other circumstances, disease of the

heart itself may arise, or the liver or kidney may suffer. A few alterative doses of calomel, with attention to the skin, and to any other symptoms of the patient's state, will probably suffice. Perhaps a few sudorifics, or a few warm baths, salt-water baths, &c., will be useful, with flesh-rubbing, exercise in a good air, nutritious diet; and, with all these, freedom of all the secretions should be maintained.

ADDITIONAL REMARKS AND EXTRACTS ON DIAGNOSIS.

I have lately had the great advantage of perusing an excellent work, entitled, "On the Changes induced in the Situation and Structure of the Internal Organs under varying circumstances of Health and Disease," by Francis Sibson, Esq., of the Nottingham General Hospital. The researches of this gentleman are calculated to prove extremely useful to the practitioner, if the author can but be persuaded to publish them. He has taken great care to avoid all sources of fallacy; and has confined himself to strictly practical indications. Like all liberal-minded men, he is anxious to disseminate information; and has kindly permitted me to make any use I please of his work. I could not refrain from enriching these pages with the following valuable extracts; which I have preferred giving to the reader in his own words:

"Space of the Heart's Dulness.—In the living body, where the lungs and heart are healthy, the space of the heart's dulness is bounded to the right by a straight line at the centre of the sternum;

above, by a line running along the fourth costal cartilage; to the left, by a curved line usually to the right of and below the nipple, the lower limb of which turns to the right. It is a very thin portion of lung that is wedged in between the heart and the ribs all round these bounds, to ascertain which peculiar tact is required; it is the most difficult lesson in percussion, and, for the discovery of Heart-disease, the most valuable.

“*Superficial Percussion.*—These superficial margins of lung are best detected by making a slight, superficial, quick, flapping tap, with the right forefinger thrown, jerkingly as it were, upon the left; or upon a pencil, placed as a pleximeter upon the walls of the chest.

“*Heart; its Central Attachment.*—The heart is attached to its place, in relative position to the lungs, by the veins supplying the left auricle; these veins issue from each lung at about an equal distance from the centre of the left auricle, which is in front of the sixth and seventh dorsal vertebræ.

“The right auricle, and the auricular portion of the right ventricle, lie to the right of the centre of the sternum. As the auricle is not much exposed to variation in size, its encroachment on the right lung does not vary much during the motions of the heart; on the other hand, a greater part of the right, and the whole of the left ventricle, lie to the left of the centre of the sternum; so that these moving muscular cavities, varying constantly in size of cavity and solidity of walls, make a constantly varying encroachment on the mass of the left lung.

“ *Right Bound.*—The right bound of the heart, in other words the outer wall of the right auricle, is from one to two ribs breadth to the right of the right edge of the sternum. This bound varies considerably in different persons, the variation being due to the variation in the quantity of blood in the right auricles; so that where the freedom of the circulation through the lungs permits the right ventricle, and, into it, the right auricle, to discharge their contents freely, this right bound approaches the right edge of the sternum. In those cases, on the other hand, where the circulation through the lungs is impeded, as generally happens towards the time of death, the right auricle and ventricle cannot freely discharge their contents, become filled, blocked up, and distended; the veins of the neck and the superior cava, the liver and the inferior cava, become greatly engorged; and the right bound of the heart encroaches much further on the right lung, and lies to the right of the sternum, almost as far as behind the costocartilaginous junctions. The vena cava superior, being the conduit to this auricle, is distended or relaxed at the same time with it, and its outer boundary is usually in the direction of the outer boundary of the auricle. Those portions of the heart that lie to the right of the centre of the sternum are always covered by a wedge of lung that thins off as it comes to the centre. By percussing with a firm, direct, deep stroke, the vibrations excited will pass quickly through the thin layer of lung and be stopped, damped by the deeper solid auricle, and will give a sound well contrasted with the reverberating resonance over the mass of the

right lung. The tip of the right auricle lies generally a little to the left of the centre of the sternum; this point is on a line with the Semilunar Valves of the pulmonary artery, which are seated just to the left of the sternum, and is immediately in front of the first spring forward of the arch of the Aorta, a little to the right and in front of the Semilunar Valves, which are usually behind the left side of the sternum.

“ *Great Vessels.*—The Vena Cava enters the auricle just to the right of the auricular portion, so that the spring of those great supplying vessels, the Aorta and pulmonary artery, and the point of entrance of the Vena Cava, all lie together side by side, the Aorta in the middle, flanked to the right by the Vena Cava, to the left by the pulmonary artery. The valve of the pulmonary artery is usually behind the sternal end of the second left intercostal space.

“ *Aortic Valves.*—The Aortic Valve is in general to the right of the third left costal cartilage; but these parts do not maintain an unvarying position. They are influenced by the motions both of the heart and lungs. In cases of enlarged heart, where there are no adhesions, in emphysema and in bronchitis, the valves of the great vessels are lowered; the valve of the pulmonary artery being then seated immediately behind the third costal cartilage; and the Aortic Valve to the right of the fourth intercostal space, and the fourth left costal cartilage. These valves, on the other hand, are generally elevated in cases of enlargement of the heart, with pericardial adhesion. The Aorta ascends a little to the left, and bulges forwards so as to approach the nearest to the sternum when on a line

with the second costal cartilage. The pulmonary artery, on the other hand, is nearest to the costal parietes, where it takes its rise; as it ascends to the lower extremity of the upper bone of the sternum, it passes gradually inwards and backwards. In cases of aortic regurgitation, where the flapping second sound of the Aortic Valves is replaced by a bellows noise, the second sound of the pulmonary artery is clearly heard over the second left intercostal space, just to the side of the sternum, but the sound is not heard over the upper part of the sternum.

“ *Arch of Aorta.*—The arch of the Aorta, in its passage backwards and to the left, is behind the first bone of the sternum, and in front of the fourth dorsal vertebra; as it gives off the Subclavian artery, it is anterior to the left half of the body of that vertebra; thence the Aorta descends in front of the left half of the bodies of the dorsal vertebræ. The second sound of the Aortic Valves is well heard over the upper part of and above the sternum, in front of the great vessels; it is likewise heard with great clearness, though feebly in comparison with the points just named, over the third, fourth, and lower dorsal vertebræ, especially to the left of their spines. If aortic regurgitation give rise to abnormal sounds, these are loudest and clearest over the usual seat of the replaced aortic second sound. The sounds of the Aortic and Pulmonic Valves are to some extent, muffled by the thin layers of lungs interposed between them and the sternum. In robust, large-chested persons, and in females, where the upper part of the chest has been unnaturally developed by the influence of tight lacing, the sounds of these

valves over the sternum are comparatively indistinct.

“ *Right Ventricle*.—The right ventricle lies immediately behind the lower half of the sternum and the third, fourth, and fifth intercostal cartilages. Its junction with the right auricle takes a curve obliquely downwards and to the right, from the centre of the sternum between the third costal cartilages to the sternal junction of the sixth and seventh right costal cartilages. The left boundary of this ventricle is defined by a line, drawn almost directly downwards, and to the left, from the outer edge of the pulmonary artery to the lower bound of the heart, a little to the right of the apex. Where the right ventricle is dilated, either by disease or by unusual distention, this left boundary line, the ventricular septum, approaches close to the left bound of the heart; this boundary, on the other hand, is at an increased distance from that bound in those cases of enlarged left ventricle where the size of the right ventricle is normal. The impulse of the right ventricle being naturally feeble in the healthy state, it is not communicated to the sternum; but where its walls are thickened, and its cavity enlarged, as in cases of pericardial adhesion, the impulse of the right ventricle being strong, heaves up the sternum. The to-and-fro friction sounds, so characteristic of pericarditis, are due to the systolic and diastolic glidings of the right ventricle on the free pericardium, when its surface is rendered turgid by enlarged blood vessels, or roughened by new vascular deposit.

“ *Tricuspid Valve*.—The Tricuspid Valve passes

from the right auriculo-ventricular junction, and lies immediately behind the centre of the sternum, where the abnormal sounds due to regurgitation through this valve are loud and clear.

“ *Left Ventricle.*—The left ventricle usually projects an inch beyond the right. The outer bound is usually behind the nipple. Its apex is behind the lower edge of the fifth rib, close to the costal cartilage. The apex of the heart is, after death, almost always drawn upwards for about half a rib's breadth. In enlargement of the heart, the outer bound of this ventricle is considerably more to the left, and the apex is much lower than in the state of health. This deep outer bound of the left ventricle is readily ascertained by strong deep percussion. The posterior surface of the left auriculo-ventricular junction is to the left of the transverse processes of the sixth, seventh, and eighth dorsal vertebræ.

“ *Mitral Valve.*—In front, the broad attachment of the Mitral Valve is immediately behind the centre of the sternum, posterior to the Tricuspid Valves. The columnæ carneæ, as they approach the apex, lie behind the fourth and fifth costal cartilages; but it is at their origin at the apex that they come the closest to the surface, and it is there that conveyed abnormal sounds, due to mitral regurgitation, are most distinctly heard; these sounds are likewise heard, though very faintly, to the left of the seventh and eighth dorsal vertebræ. As the Aorta is there interposed between the vertebræ and the heart, the aortic valvular sounds are carried by the current of blood to this point. If the abnormal sound there

heard be louder over the third and fourth dorsal vertebræ, it is due to disease of the Aortic Valves; but if the sound become louder on approaching the heart's apex, and is not heard behind the upper dorsal vertebræ, it is due to mitral regurgitation. The healthy first or systolic sound begins with a sharp, clacking, often ringing noise, perfectly alike in character to the second sound; this sharp sound is heard exactly at the same time that the shock of the impulse is felt; it is loud in the neighbourhood of that shock, and over the whole region of the heart's dulness, but is indistinct and feeble wherever any portion of lung is interposed between the heart and parietes. The sharp noise is followed by a dull rumble, which is usually heard over a very great extent, and especially where the chest is narrow and its walls thin. The lower bound of the heart extends from the lowest point of auriculo-ventricular junction to the apex, with a gentle obliquity downwards and to the left; it usually passes behind the articulation of the xyphoid cartilage to the sternum. If the liver does not extend to the left of the apex, the hollow resonance of the stomach affords a marked contrast to the dull sound of the heart; and as firm percussion over the lower and left margin of the liver usually brings out the resonance of the deep stomach, we can almost always ascertain the heart's lower boundary. This boundary almost invariably extends from the inner edge of the lower margin of the right lung, which is usually just under the extremity of the sternum, to the inner edge of the lower margin of the left lung, which is a little to the right of the heart's apex. Ascertain these points, draw a

line from one to the other, and you will define the lower bound of the heart with just precision. In lifetime the lower bound of the heart is usually about half a rib's breadth higher than it is after death. On making an examination of the dead body, the lower bound, of the pericardial sac is found to be lower than the heart's lower bound, as the heart, after the last vital contraction, contains less blood than it does during life, and retracts upwards.

“*Arteria Innominata*.—The arteria innominata is in front of the trachea, just above the sternum; its beat is not usually seen, but it is visible in cases of aortic regurgitation, where the vessel rises with a rapid bound and falls back with a sudden jerk; and it is also seen where the artery is unusually distended, as in cases where there is an undue and overabundant supply of arterial blood to the head. Besides this arterial pulse that is occasionally seen in the neck, we have another, a venous pulsation, that is almost invariably visible.

“*Jugular Pulsation*.—The deep jugular veins lie beneath the sterno-cleido muscles, when joined by the subclavian veins they pass into the chest just behind the junction of the sternum and clavicle. There is a constant visible pulsation, both in these and in the superficial jugular veins, which pulsation, though perfectly visible, cannot be felt. The veins are *most distended* during the *systole*, when the blood is sent with the greatest energy by the contraction of the ventricles through the arteries and capillaries along the veins. At the same time, the contraction of the right ventricle prevents its reservoir, the right auricle, from discharging itself,

so that the auricle and the conduits leading to it, the veins, become distended. Immediately after the ventricular contraction the cavity of the right ventricle becomes *flaccid*, the contents of the veins are forced onwards into the auricle by the contraction of the arteries previously distended during the systole; and from the auricle by the same action, the blood is poured into the right ventricle. The obstruction to the progress of the venous blood is now removed, and during the *second sound* the veins become comparatively *empty*, a slight rally instantly takes place, the veins *swell*, but to a very slight degree; the *second swelling* is instantly followed by a *second*, though a very slight *depression*, after which, a gradual swell takes place; this swell continues during the whole of the interval, and suddenly increases during the systole. The second slight pulsation is like a gentle rapid dance upon the surface of the vein.

“*Effect of Respiration on Jugular Pulsation.*—The veins of the neck contain the least blood during a deep inspiration, the expansion of the walls of the chest withdraws the pressure of those walls from the right cavities of the heart, and permits the blood to be sent more freely into those cavities. The venous pulsation is much diminished, in many persons rendered invisible,^F during a deep inspiration. A forcible and deep expiration has, on the other hand, quite an opposite effect; the contracted walls of the chest compress the right cavities of the heart and prevent the ingress of venous blood. The veins of the neck and of the thyroid body become necessarily distended; these veins indeed

become an ever-varying reservoir, that adapts itself with perfect flexibility to the expansion or contraction of the heart, so that, when the cavity inside is lessened, the reservoir outside is enlarged. During the deep expiration, provided the swelling of the veins be not extreme, the venous pulsation is increased: if the veins become completely distended, pulsation cannot, does not take place; the constant full distention does not admit of variation. The venous pulsation is readily distinguished in the recumbent posture during ordinary inspiration. Each inspiration lessens the quantity of blood in the veins, each expiration increases it; so that here, in the act of respiration, we have a cause for another venous pulsation wave. The mere existence of jugular pulsation is any thing but an indication of disease, either in the Pulmonary Valves or elsewhere. In those diseases where the flow of blood through the lungs and heart is impeded, the jugular veins contain more blood, and their pulsations are more visible than in health; but where the impediment is extreme the veins are in a state of constant distention, and no pulsation is visible. If, on the other hand, the circulation be feeble, and there is no resistance to the emptying of the venous blood into the heart, then the veins contain very little blood, and the venous pulsation is very slight, scarcely to be perceived.

“ *Influence of a Full Meal on the Liver, Heart, and Lungs, in Dyspepsia.*—In many persons a hearty or indigestible meal is soon followed by pain in the region of the stomach, a sense of præcordial weight, palpitation, and dyspnœa. The pain, though

referred to the heart, is seated in the stomach, which, being greatly extended, presses the lower surface of the liver upwards against the diaphragm, compresses the whole organ, and doubtless pushes the blood from the hepatic veins into the right auricle. At the same time that the heart is thus overcharged, that organ is itself pressed upwards, along with the diaphragm, by the stomach. The action of the lungs is likewise interfered with, the diaphragm being pushed up, and its descent impeded. Can we wonder that, in these circumstances, the striving of the heart to throw off its blood, and the efforts of the clogged lungs to arterialise the increased quantity of blood, should give rise to palpitation, and to difficult and hurried breathing.

“*Seat of Impulse in Repose.*—The heart’s impulse in the state of repose, is felt sometimes between the fourth and fifth, and sometimes between the fifth and sixth ribs. The shock of the apex is felt lower and more to the left than the impulse of the right ventricle, being generally below or just to the right of the nipple, and a little to the left of the region of the heart’s superficial dulness, the thin portion of lung interposed between the apex and the walls of the chest being pushed aside by the systole. The shock at the apex rises very firmly, gives a lengthened blow, and falls back very suddenly. The gentler, slower, less firm impulse of the right ventricle is seldom to be felt in large-chested persons; but in those with moderate-sized or narrow chests it is perceptible over the fourth or fifth intercostal space from the point of the apex to the sternal wall, and

also over the costal cartilages above that space, and very gently over the space above. The smaller the chest the more extensive is the seat of the heart's impulse.

“ *On a deep Inspiration, the Impulse of the Heart is lowered to the Epigastrium.*—On a deep inspiration, and in emphysema, bronchitis, and those diseases where the heart and lungs are dilated and lowered, the region of the heart's superficial dulness is lowered and narrowed, and the dilated lung is further interposed between the apex of the heart and the walls of the chest. The seat of the impulse is lowered; it is usually felt over the xyphoid cartilage, the epigastrium, and the combined cartilages of the sixth and seventh ribs.

“ The apex of the heart cannot be felt through the thickened lung. As the impulse is due to the contraction of the right ventricle, it is slow, heaving, rises gently, gives no blow, and falls back quickly, but not abruptly. The impulsive, loud, sharp, clacking noise that begins the systolic sound, is not now heard over the usual, but over the lowered space of the heart's dulness.

“ *The Heart's Sounds are feebler over the great Vessels.*—The lungs between the great vessels and the upper part of the right ventricle are much thickened and lowered; consequently the heart's sounds, especially the second sound, are much fainter over the upper part of the sternum.

“ *The Inspiratory Descent of the Heart.*—The heart is fixed in its relation to the lungs at the left auricle by the pulmonary veins; as the lungs descend, the heart descends also. The ventricles and

right auricle are further lowered by the descent of the central tendon. The descent of the heart lengthens the Ascending Aorta, gives the arch of the Aorta a sharper turn, and draws down the innominate, subclavians, and carotids. At the same time that the arteries in the neck descend, the sternum rises; the arteria innominata, that in repose ascends from half an inch to an inch above the sternum, is seated, on a deep inspiration, behind that bone.

*“In Expiration the Lungs and Heart are compressed, lessened, and raised.—*The contraction of the walls of the chest compresses and lessens the elevation of the diaphragm, and raises the lungs and heart. The heart is not so much compressed and lessened as are the lungs, therefore a greater portion of that organ comes in contact with the walls of the chest.

*“Heart’s Superficial Dulness and Seat of Impulse raised and extended.—*The region of the heart’s superficial dulness is raised and enlarged. The shock of the apex is stronger, and instead of being felt between the fourth, fifth, and sixth ribs, as in repose, is now raised to the space above, and is felt either over the fourth or third intercostal space, a little to the right of the nipple. The impulse of the right ventricle is more extensive and stronger, and is usually felt over the second, third, and fourth intercostal spaces, and sometimes behind the sternum. The impulse shock, or sharp noise beginning the systole, is heard over a higher and more extensive surface.

*“Heart’s Sounds are louder.—*The heart’s sounds

are heard more loudly, and with greater clearness, over the whole chest, especially over the great vessels.

*“Action of Systematic Ventricle stronger ; it sends more Blood into the System.—*The blood that had been accumulated and arterialised in the lungs during the previous inspiration, is sent into the left auricle by the combined influence of the systolic contraction of the right ventricle and the contraction of the walls of the chest; the thoracic contraction compresses the lungs, lessens the pulmonic blood vessels, and forces forward the blood they contain. The systolic contraction of the left ventricle is assisted by the expiratory compression from the sternum and costal walls.

*“*The blood is sent from the left auricle into the passive left ventricle by the contraction of the elastic walls of the pulmonary artery, which had been previously enlarged and distended by the action of the right ventricle.

*“*The force of the systole of the left ventricle is increased by the expiratory contraction of the chest. The blood that has been arterialised during inspiration is sent into and through the system with increased force and speed. At the same time that the contraction of the chest hinders the returned blood from distending the right auricle, that blood collects in and distends the veins of the neck and thyroid body of the liver and spleen.

*“Less Blood is received into the Right Auricle and Ventricle.—*A diminished quantity of blood is sent into the right auricle, through the systemic circulation, by the contraction of the left ventricle; and

from the auricle into the ventricle, by the return of the elastic walls of the arteries to their previous size, after being distended by the systole of the left ventricle.

“The smallest amount of blood is sent by the right ventricle into the blood vessels of the lungs when there is the least quantity of air in the air-cells to arterialise that blood.

“At the time that the blood is sent with greater force in increased quantity through the system it is sent with diminished force in lessened quantity through the lungs.

“On the other hand, during inspiration, when the blood is sent with increased force in greater quantity through the lungs, it is sent with diminished force in less quantity through the system. These apparent contradictions reconcile themselves into perfect adjustment.

“The greatest quantity of blood is required in the lungs' vessels during inspiration, when there is the greatest amount of air in the lungs' air-cells to act on that blood; and the greatest quantity of arterialised blood is required in the system during expiration, when the energies of the system are greatest, and its muscular exertions most powerful.

“*Energetic Acts performed during Expiration, when the Systemic Circulation is most active.*—All the violent acts of exertion are performed during expiration, as lifting weights, wrestling, and coughing. The more energetic the exertion the more active is the required supply of arterialised blood. Exactly in proportion to the energy of the exertion is the rate of breathing and of circulation.

“The same person that reposing in bed has a pulse of fifty or sixty, and breathes fifteen or sixteen times in a minute, has, when running, a pulse of about 180, and breathes about fifty times in a minute; the pulse being stronger, the breathing fuller, during running than in repose.

“*Seat of Heart's Dulness.*—The region of the heart's superficial dulness is just behind the left side of the xyphoid cartilage and the conjoined sixth and seventh left costal cartilages. This region is lowered and narrowed during a deep inspiration, its upper edge being brought down from the top to the middle of the xyphoid cartilage, its lower end is below that cartilage, and the left margin is just behind the inner edge of the sixth and seventh left costal cartilages. The region of the heart's contact is, in fact, entirely in the epigastrium.

“A deep expiration raises and widens the region of the heart's dulness. It is brought behind the lower end of the sternum, both sides of the upper half of the xyphoid cartilage, and the sixth and seventh costal cartilages at their sternal junction.

“The lung is everywhere thinner over the heart; the region of the heart's deep dulness is much extended, the degree of dulness is greatly increased.

“*Seat of Impulse.*—The impulse, if present, occupies the same seat as the region of the heart's superficial dulness, being situated in the epigastric region, just below the sternum; it is usually very gentle, heaving, diffused; lasts a very short time, and falls back suddenly; there is often, where the impulse cannot be felt, a visible undulation to the left of the xyphoid cartilage.

The suddenness and quickness of the fall back gives the impression that there is a falling in during the systole, instead of a heaving. By the combined assistance of the flexible stethoscope, the eye, and the touch, a little attention shows that there is a heaving impulse at the beginning of the systole, and a falling back during its progress.

“On a deep inspiration the impulse is lowered quite into the epigastrium, below the xyphoid cartilage and the edge of the sixth and seventh costal cartilages, it is strong, heaving, falls suddenly back, and is not altered in character from the impulse in a state of repose. The influence of the impulse is more readily conveyed through the muscular than bony walls, and the heart too is pressed on by the walls during inspiration, as they are pressed back upon the heart at the beginning of the inspiratory act while the heart heaves forward. The impulse can very seldom be felt during expiration; sometimes it is perceptible to the eye and touch, especially if the case be not extreme, between the fifth and sixth ribs; sometimes there is a very gentle heaving of the sternum.

“*Heart's Sounds.*—The heart's sounds are heard over a very limited extent when the patient is at rest. The impulsive sounds are only heard over the region of dulness in front of the xyphoid cartilage, and sixth and seventh costal cartilages; the sounds are very faint, often inaudible, on the upper part of the sternum; the second sound is heard very plainly just above the junction of the right clavicle to the sternum.

“*Effect of Inspiration on the Heart's Sounds.*—On

a deep inspiration the sounds are lowered, with the region of the heart's dulness and impulse, into the epigastrium. The systolic impulsive sound is louder and more ringing than it is in the tranquil state; this is, probably, due to the falling in of the sternocostal walls over the heart while that organ advances. The diastolic sound is generally louder, sharper, and more ringing than the systolic, or than the usual second sound. The systolic and the diastolic impulsive sounds are only heard over, and immediately contiguous to, the seat of the heart's dulness.

“*Effect of Expiration on the Heart's Sounds.*— On a deep expiration the impulsive sounds are loud and ringing, and are heard much more extensively, quite over the enlarged space of the heart's dulness, and to some extent over the neighbouring surface. The systolic impulsive sound of the apex, before quite inaudible, is now generally heard loud, sharp, and ringing, between the fifth and sixth ribs.

“The normal first and second sounds are now very plainly heard over the whole sternum, and over and beyond the whole region of the heart's deep dulness; they can also be heard over the dorsum. In examining the character of the heart's sounds to ascertain whether there be valvular murmurs, it is necessary to listen during a deep expiration. During the ordinary play of respiration the sounds are higher and more extensive on expiration, and lower and less extensive on inspiration. During the former they are loudest over the sternum and apex; during the latter, over the epigastrium.

CHAPTER X.

SOME OBSERVATIONS ON RHEUMATISM, ITS PATHOLOGY, AND THE PREVENTION OF HEART-DISEASE.

I HAVE always intended to publish an Essay on the Pathology and Treatment of Rheumatism in full detail; but I have not been able to do so hitherto; and as I may yet be prevented for a long time, or even altogether, I feel an anxiety to give with the foregoing sheets, although at the risk of considerable repetition, a skeleton-sketch of my opinions, and of the treatment I would propose for adoption—in the hope, that we may all of us learn, so to treat Rheumatism, that few instances shall occur of Heart-disease having arisen from it.

No one who has had much experience in Rheumatism—no one even who has read the foregoing pages, can fail to be struck with the great importance of such a treatment of it as shall prevent the access or supervention of any of the before-mentioned forms of Heart-disease. As our preliminary observations have shown, the results at stake are no less than, in the event of success, comfort and prolongation of life to the rich man, and a long life of useful labour to the poor man:—in the event of failure,

misery of no common character, and a life, much curtailed of its average duration.

We find that disease of the heart may supervene on slight attacks of Rheumatism as well as on severe ones—also, that its commencement may be so insidious as to attract little or no notice; and that when once certain lesions of structure have taken place, we must abandon the hope of removing them. How valuable then must be a successful plan of Prophylaxis!

The profession rely for a cure of Rheumatism, on blood-letting, mercurials, purgatives, and certain sedatives; and truly, these remedies, properly employed, are often followed by success; but yet, instances are to be met with, where they have failed, though the treatment has been energetic, and conducted by men of some eminence as practitioners. Such instances are on record and are not unfrequent even;—the inference is, that we are not acquainted with the real pathology of the disease. Accordingly, to this day, it is confessed that the reasons why Heart-disease should occur from Rheumatism, are not known—the profession contenting itself with a reference to the election made by Rheumatism of the fibro-serous structure for its site, and to the quantity of fibrous structure found in and about the heart.

But it has been previously shown, that Heart-diseases may follow or be caused by other diseases than Rheumatism; and that those other diseases have no preference of the fibrous structure. Where is the link of connexion? why in all, the blood is affected more or less; and this state of the blood seems to form the chief, if not the only, state common

to the disorders alluded to, as well as to Rheumatism. What then is this state of the blood? Fortunately for us when we attempt to answer this question, we find that the Humoral doctrines are no longer what they were when anatomy and physiology were yet altogether rudimentary, and true chemistry was unknown — when hypothesis was every thing, observation nothing. Now we possess enlightened experimental chemists, on whom will probably devolve the glory of clearing up this and many another problem in Pathology. As the editor of the "Lancet" justly observes, with respect to the right road of investigation, that we must now look to organic chemistry, "The residual phenomena of life and disease, after observation and experiment on the vital powers have become exhausted belong to organic chemistry. And at this moment, that science having itself undergone a marvellous and sudden development, offers the test of the balance, to decide those questions, belonging to organic matter, which have hitherto appeared to be out of the field of inquiry."

One clue to our right understanding and proper treatment of Rheumatism has been afforded us, in the chemical researches published by Andral in his "Hæmatologie Pathologique." He tells us that the blood in the human subject when in health contains in 1000 parts from 2.5 to 4. of fibrine, and that the mean increase of fibrine during articular Rheumatism, fluctuated between 7 and 8 per 1000, and the maximum increase amounted to 10.2, or more than triple its natural quantity. Now a change of density of the blood, to the extent described, is surely well

calculated to excite the heart to unusual action, and to induce in the blood, a readiness to deposit some of its superabundant fibrine. And this is what obtains in Rheumatic Endocarditis, and gives us one reason for the heart being attacked in Rheumatism.

But besides this state of the blood as regards fibrine, it appears to me reasonable to infer from the remarkable indications of an acid diathesis predominating throughout the entire system, during Rheumatic fever, that the blood is labouring to relieve itself of irritant particles, which approach to an acid nature.

I am well aware that the blood is an electro-negative body; and that it is supposed a free acid cannot exist in it. This may be true; and yet the blood may be so altered from its alkaline state, as to prove the cause of high irritation throughout the system. By the accomplished and expert chemist alone, can this problem be solved—by one who is versed in researches of this nature.

My readers will see at page 19, that Dr. Schönlein of Vienna thinks the time will come, and bring a justification with it, of this supposition as to acid, or the elements of acid, existing in the blood. The remarkable facts bearing on this subject, there related, together with the indicia of the expulsion of acid from the blood, through the medium of the urine and skin, during Rheumatic fever, have strongly impressed my mind; and I cannot but cling to the hypothesis, till it be satisfactorily disproved.

To justify the alkaline modification, which I propose, of the treatment of Rheumatism at present in use, I need but refer to the excess of fibrine in Rheu-

matic blood, and to the now established character of alkalies for reducing thickness of the blood; but as excess of fibrine alone is not sufficient to account for all the phenomena which occur throughout the progress of Rheumatism, I deem the Alkalies further useful, by a direct chemical action on the abnormally acid state of the blood and the secretions. Accordingly I have witnessed a clearing of the urine, and a change of the acid sweats occurring under the use of Alkalies, much sooner than ever takes place in the ordinary course of Rheumatic fever. I have prescribed Alkalies, for more than fourteen years in Rheumatic cases—of which I must have treated about 400—out of that 400, at least fifty have been cases of severe disease. I have had an opportunity of watching the results of such treatment; and have never failed to use the stethoscope more or less in all such cases—yet in no single instance has Heart-disease been caused by the Rheumatism, when the alkaline treatment had been fairly followed. It will be as well to add, that I have used the stethoscope, and studied its application and method of using it since 1820.

This immunity from Cardiac Disease in Rheumatism, appears very startling when placed in contrast with the average of cases. Bouillaud asserted that Endocarditis accompanies every case of Rheumatic inflammation of the joints; but then he was probably self-deceived in many of his cases, by his *coup-sur-coup* bloodlettings. Dr. Watson tells us that one-third of the cases of Rheumatism which occur in London, are accompanied by some form of cardiac affection—Endocarditis and Pericarditis being

the most common—Dr. M'Leod says, more than one-fifth. If this be true, how very important must prevention be! Objections have been made to my statements on this head, first, that some cases of Heart-disease are latent or masked; secondly, that such disorder may have occurred or been manifested after treatment, and I had lost sight of the person. To the first, I can reply, that the disorder must have been masked for the many years I had pretty close opportunities of observing such persons—that if they had become ill, they would have again applied to me, because they still lived in my neighbourhood: and that when Heart-disease is caused by or during Rheumatism, a shortness of breath would not be long in making its appearance.

To the second objection I may reply, that having peculiar opinions on the subject, I watched all such sufferers, as closely as my opportunities allowed; and that I don't recollect any, certainly there could not be many instances, of my having lost sight of the patients. It must also be borne in mind, that this watching is not difficult in the confined population of a country-town, including even its neighbourhood; in such circles every thing of this sort is pretty generally talked about and known, even amongst the lower orders.

I would, then, earnestly press on my medical brethren, a trial of the Alkalies, in addition to the medicines they may now be in the habit of prescribing, provided they be not chemically incompatible.

Without entering into full detail, I will describe the mode of treatment I usually adopt. If the patient be of sthenic habit, and the acute symptoms

violent, I would order a single V.S.—though henceforth, I expect to meet with few cases which will not yield to Aconite—however violent they may be. Aperient medicines are then given; then at night and morning pills of Calomel, gr. ij., with Extract of Aconite, gr. $\frac{1}{8}$; and sometimes Pulv. Ipecac. Comp. gr. v. to x. In the daytime, a mixture of Liq. Potass. ʒss. to ʒij. Vin. Sem. Colchic. m. xx. Infus. Sennæ or Aq. Menth. Sativ. ʒj. ter vel quater indies. Sometimes, indeed usually, I add Sp. Ammon. C. m. xx. to each dose, to prevent the deadly languor produced by the Colchicum.

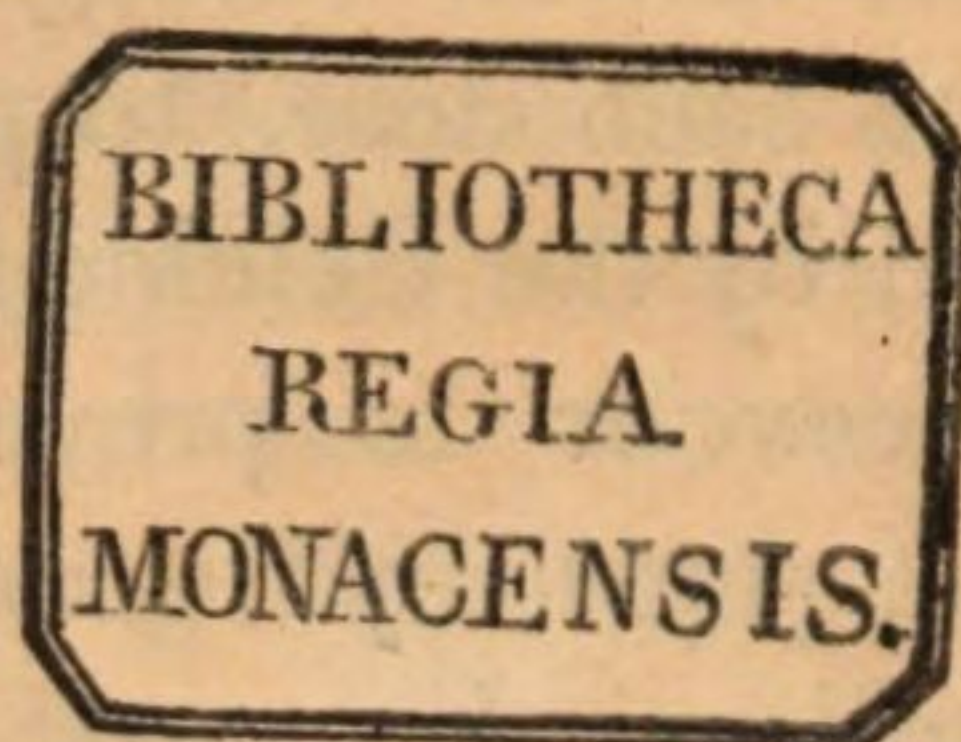
I always endeavour to prevent the mercurial from affecting the gums, by discontinuing it in time, and by early gargling. In general too, the Infusum Sennæ will soon have to be discontinued. The Colchicum is omitted directly nausea or languor begin to show themselves. In this way the most violent cases have been treated, and with very satisfactory success, both as to quickness and to safety from Heart affection.

The influence of the Aconite will surprise many who have never yet tried it, as may be conjectured from the interesting account of its action in Rheumatism, by Dr. Lombard. Indeed, I hope to see it take its place as an antiphlogistic of great power; and also to see the lancet superseded by it in all cases of inflammatory excitement with want of vital power in the patient; when I am confident there will be fewer deaths from the nimia diligentia medici.

The Aconite I have prescribed, has been for the most part obtained from Mr. Battley—and some of

the preparations of this plant, made by this gentleman, are very powerful—they require caution and watching during their exhibition.

The treatment of Rheumatism recommended at the present day, requires some modifications, adapted to the various forms of the disorder, and to the various constitutions of those in whom it may occur. The writer hopes to have some future opportunity of stating in detail the results of his experience on the subject.



THE END.

Furnivall, J. J.

The Diagnosis, prevention & treatment of diseases of the heart, and of
Aneurism

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